

Chemical Week

October 19, 1957

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Spotlight on Sputnik: Does the Russian 'moon' have a message for the CPI? p. 31

He makes \$65,400/year, his big problem: time. He's the 'average' chemical firm president . . . p. 43

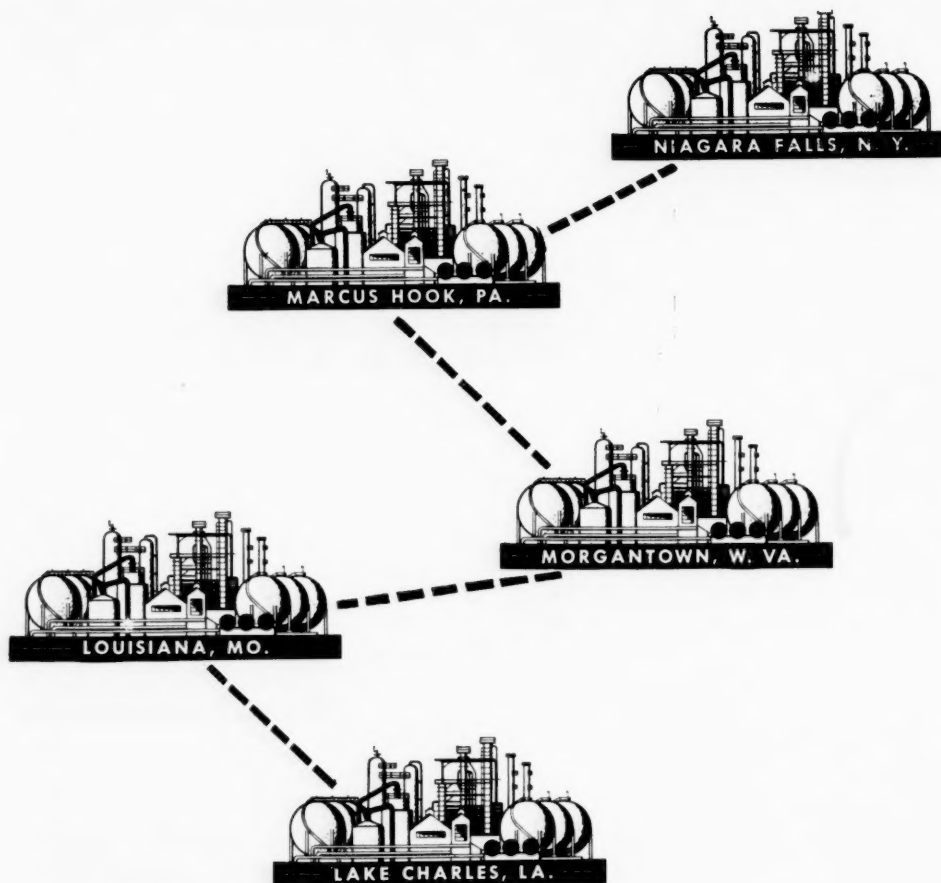
All-electronic process control highlights new distillation plant. Feature: easy maintenance . . p. 61

'Stackstacker' heads for next call—the day 35 Pfizer salesmen invaded Chicago p. 99

Cosmetic to soda ash: Can it solve the alkali industry's perennial oversupply problem? p. 109

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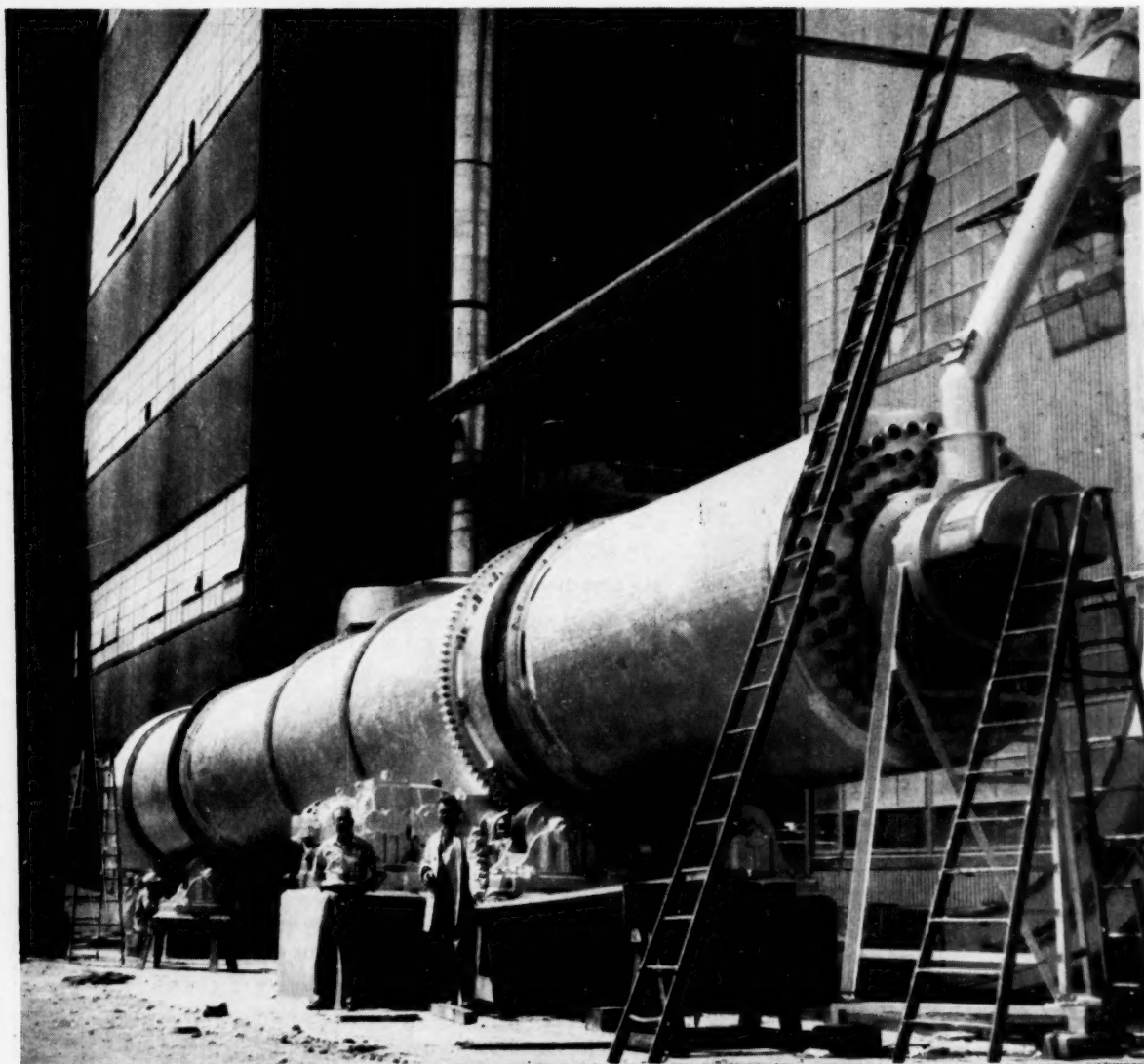
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- ▶ **All-electronic process control** is pioneering feature of Truland Chemical's new distillation plant. Big advantage over pneumatic systems: fewer maintenance headachesp. 61
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Watch CW Grow — 38,042 copies of this issue printed

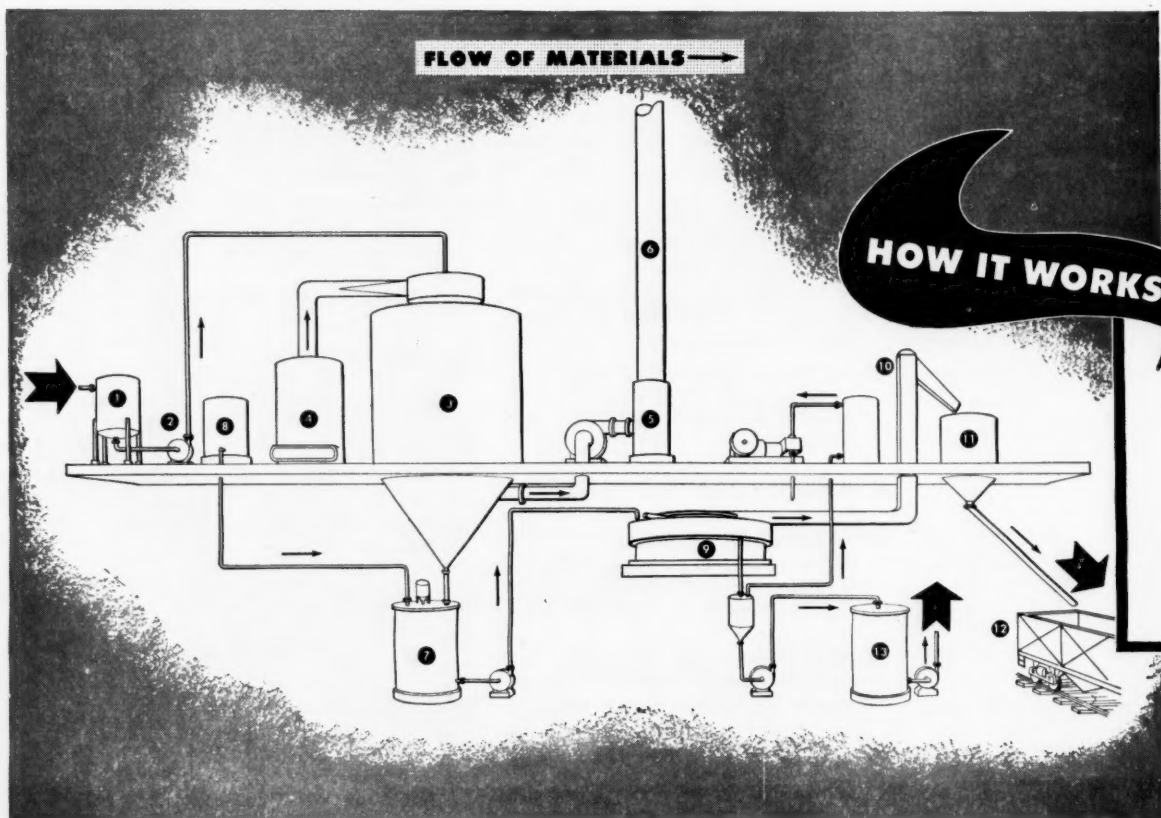


If you operate a CUT ACID REQUIREMENTS

New continuous process, available from Koppers,
of pickling acid used... and eliminates waste

FOR OVER A QUARTER OF A CENTURY, wherever a pickling line has been in operation, disposal of spent liquor has been a major headache. But now a new continuous regeneration process—the Koppers Inland-Zahn process—goes a long way toward solving this problem. This system is simple, it is economical, and it has been proved in actual plant-scale commercial operation in Europe.

With this process, the only make-up acid needed is the amount consumed in the pickling reaction plus normal losses. All available free acid in the used liquor is recovered (up to 50% of the original charge). Labor costs are low—just one man can operate the entire regeneration plant. As a result of these savings, operating costs are substantially below those of any presently available disposal method.



Pickling line

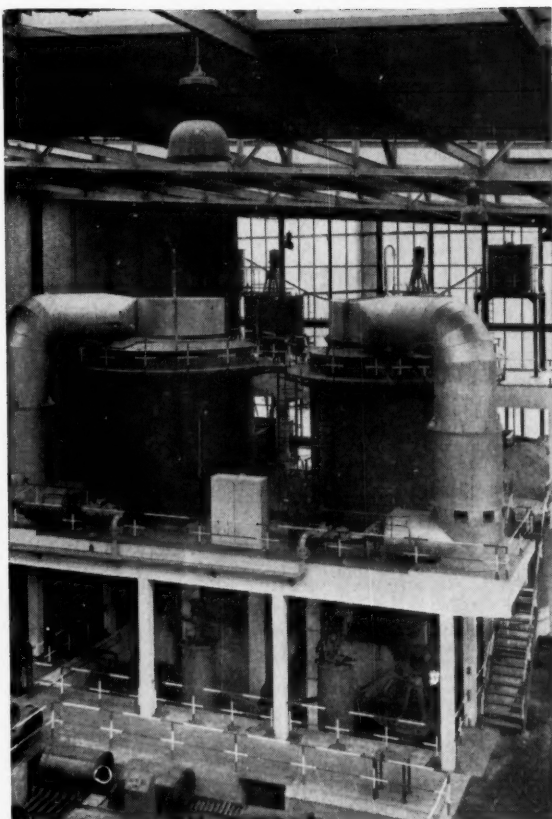
IN HALF!

regenerates up to half
liquor disposal problem

PROVED COMMERCIALY—This process, developed by Inland Steel Company and adapted commercially by Zahn & Co. of West Germany, is now being used successfully in three European steel plants. The benefits achieved include *extremely low maintenance* . . . and more uniform and *higher acid concentrations* in the baths. The latter advantage permits faster steel processing.

NEUTRALIZING PLANTS — The new regeneration process is especially applicable to plants handling 10,000 gallons of effluent, or more, a day. The Chemical Department of Koppers Engineering and Construction Division also designs and builds lime neutralization systems for both large and small pickling operations. Send the coupon for complete information about these and other Koppers Chemical Engineering Services.

Spent pickle liquor (1) is pumped (2) to spray head in an evaporating chamber (3). Here, hot air and flue gases from combustion chamber (4) concentrate the liquor and cause the ferrous sulfate monohydrate to crystallize out of solution. Vapor laden air is discharged to atmosphere through mist eliminator and stack (5 and 6). The slurry is dropped into a crystallizing tank (7) where fresh sulfuric acid is added from a metering tank (8). This causes more monohydrate to drop out. The slurry is then separated in a vacuum filter (9) and washed. Salt is conveyed to bins oropper cars for sale or disposal (10, 11, 12). Mother liquor, containing about 35% acid and 1-2% iron, is pumped to a holding tank (13), ready for dilution and return to the pickling tanks. No reheating is required.



HEART OF THE SYSTEM—This spray dryer concentrates spent liquor to slurry of ferrous sulfate monohydrate crystals suspended in acid. The plant shown here, in Germany, has operated since June, 1954, processing 48,000 gallons per day of waste liquor.

GET ALL THE FACTS!

Koppers Company, Inc.
Engineering and Construction Division
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I would like to receive literature on this new pickle liquor regeneration process . . . and also on Koppers other chemical engineering services. Please send the following:

- ☐ Regeneration of steel pickling solutions by Koppers Inland-Zahn process.
- ☐ Lime neutralization of spent pickle liquor by Koppers.
- ☐ "3 Keys to Selecting Your Industrial Contractor," a brochure describing the variety of Koppers construction services and giving reasons why Koppers should build your next chemical plant.

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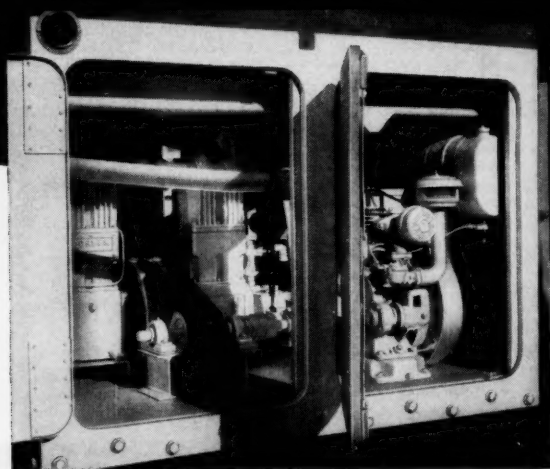


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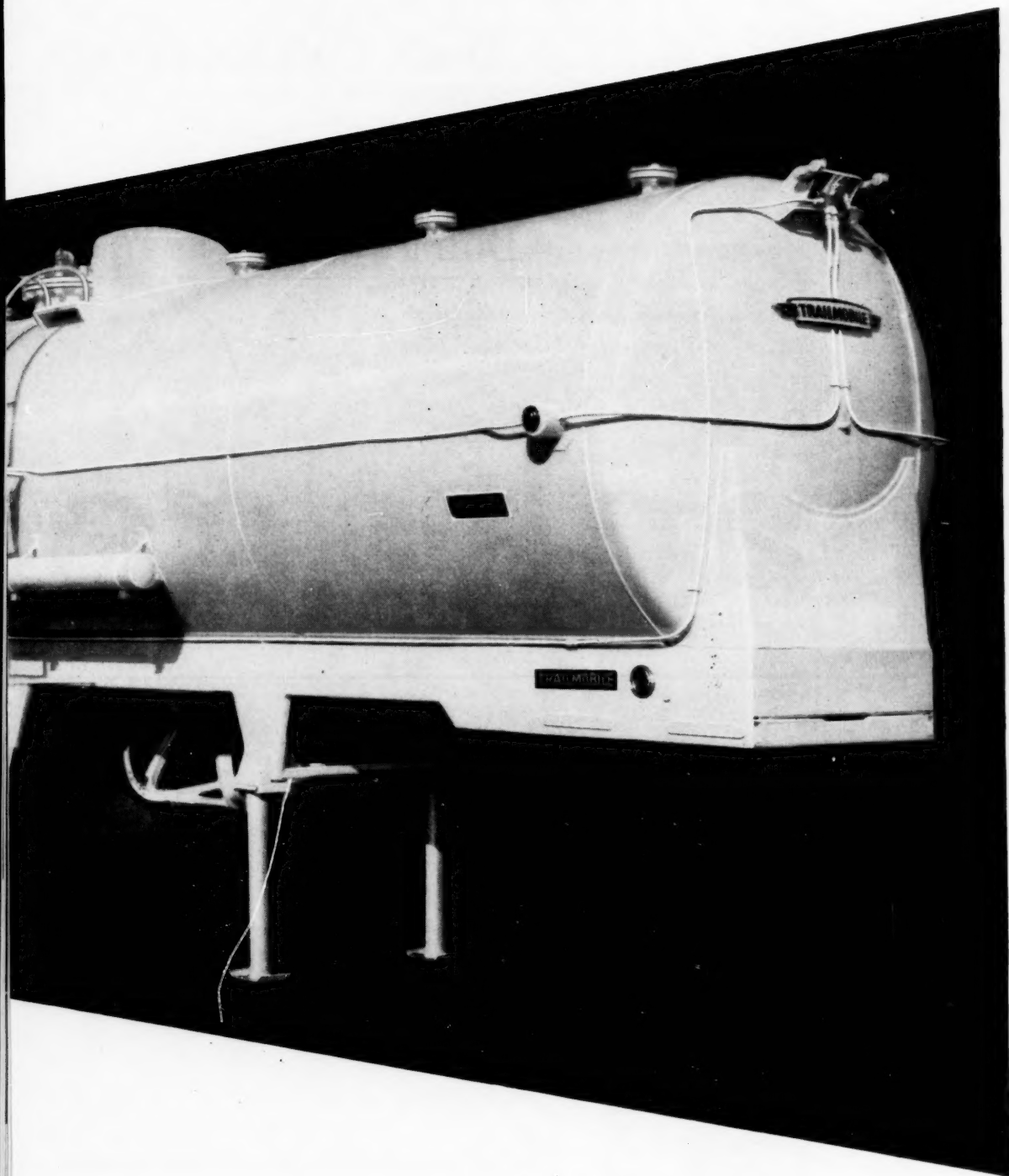


This view shows engine-driven twin compressor used in discharging the liquid. Compressors are located in housing below tank and are accessible through double doors on either side of the housing.

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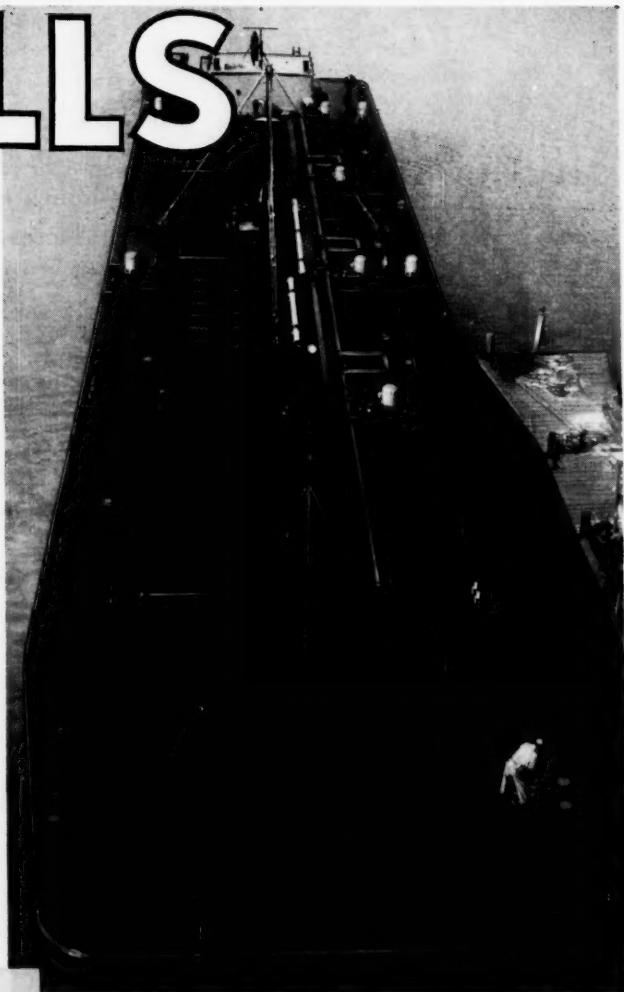
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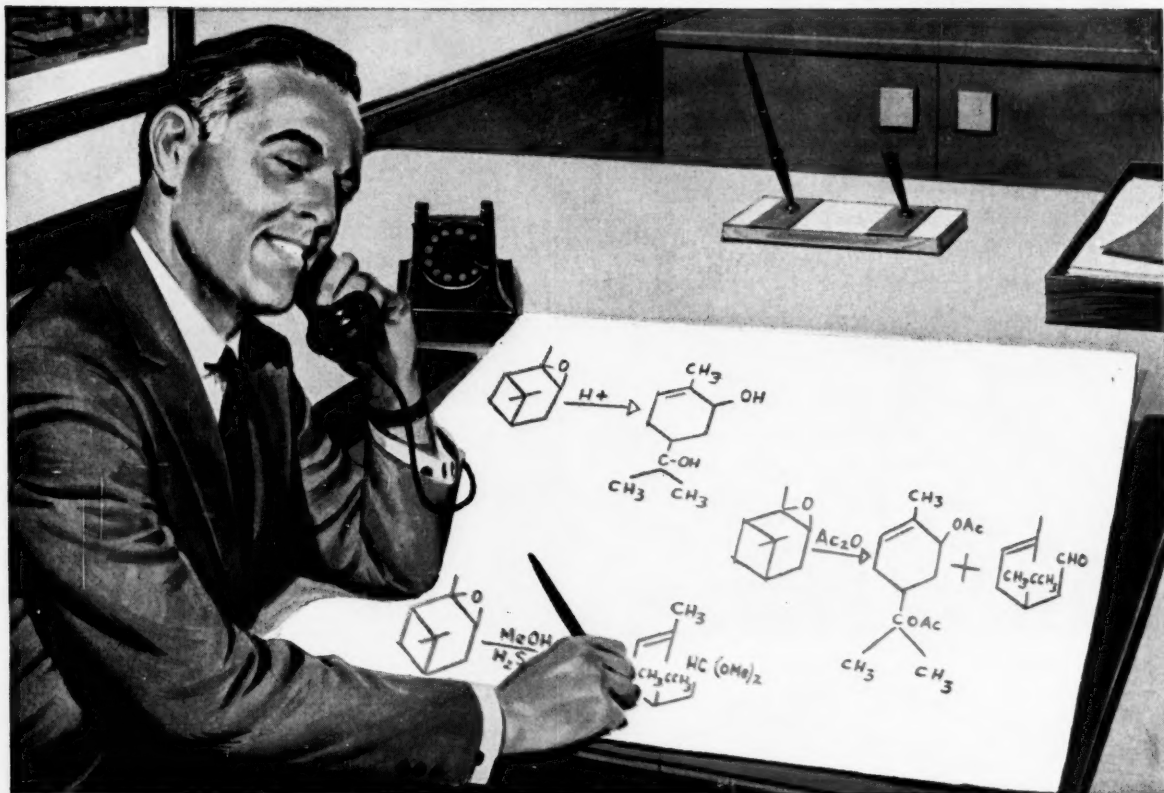
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Write Becco for experimental quantities and technical assistance in possible application for these compounds. Ask for Becco Bulletins Nos. 81 and 82.

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Food Machinery and Chemical Corporation
Station B, Buffalo 7, New York

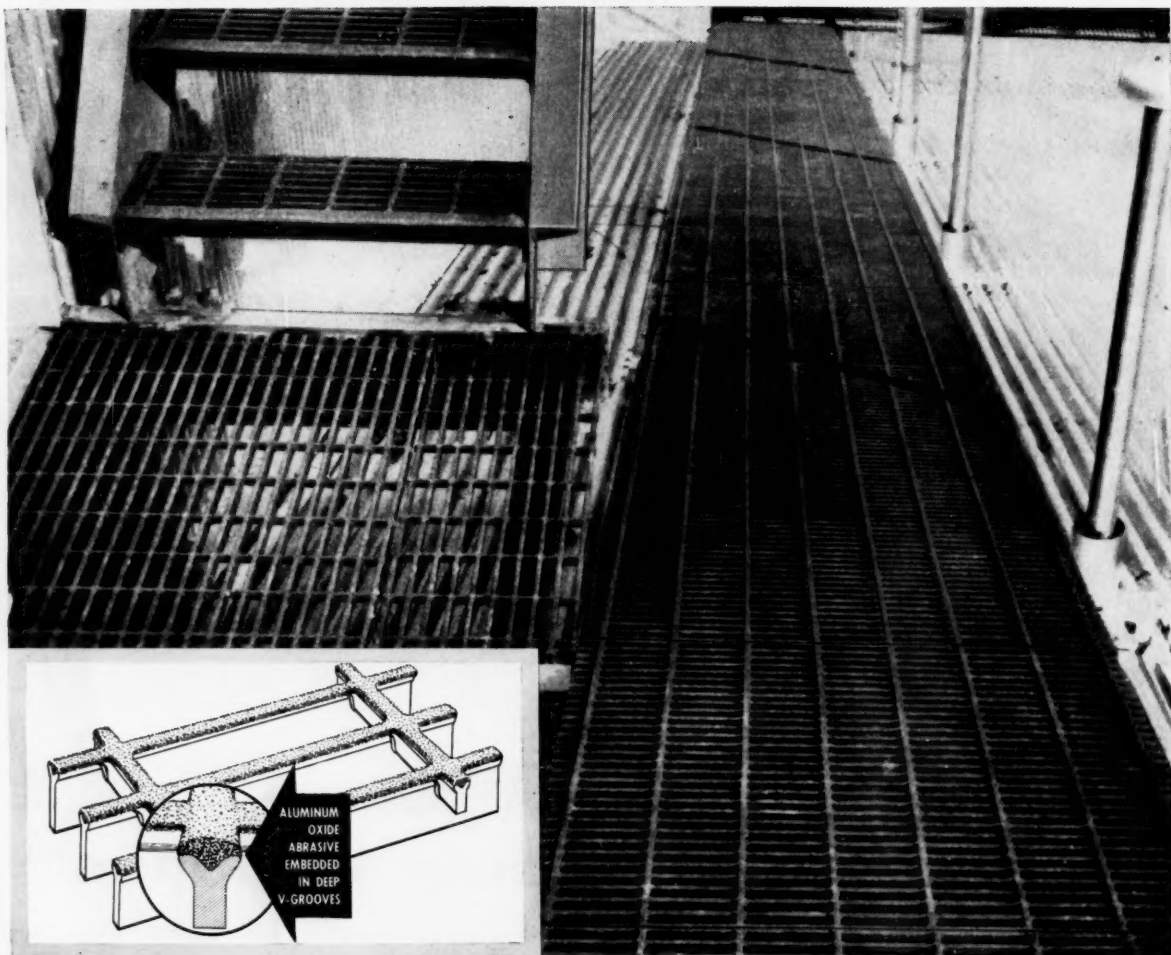
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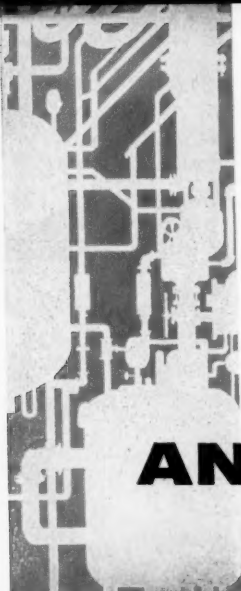
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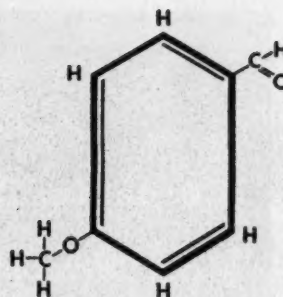
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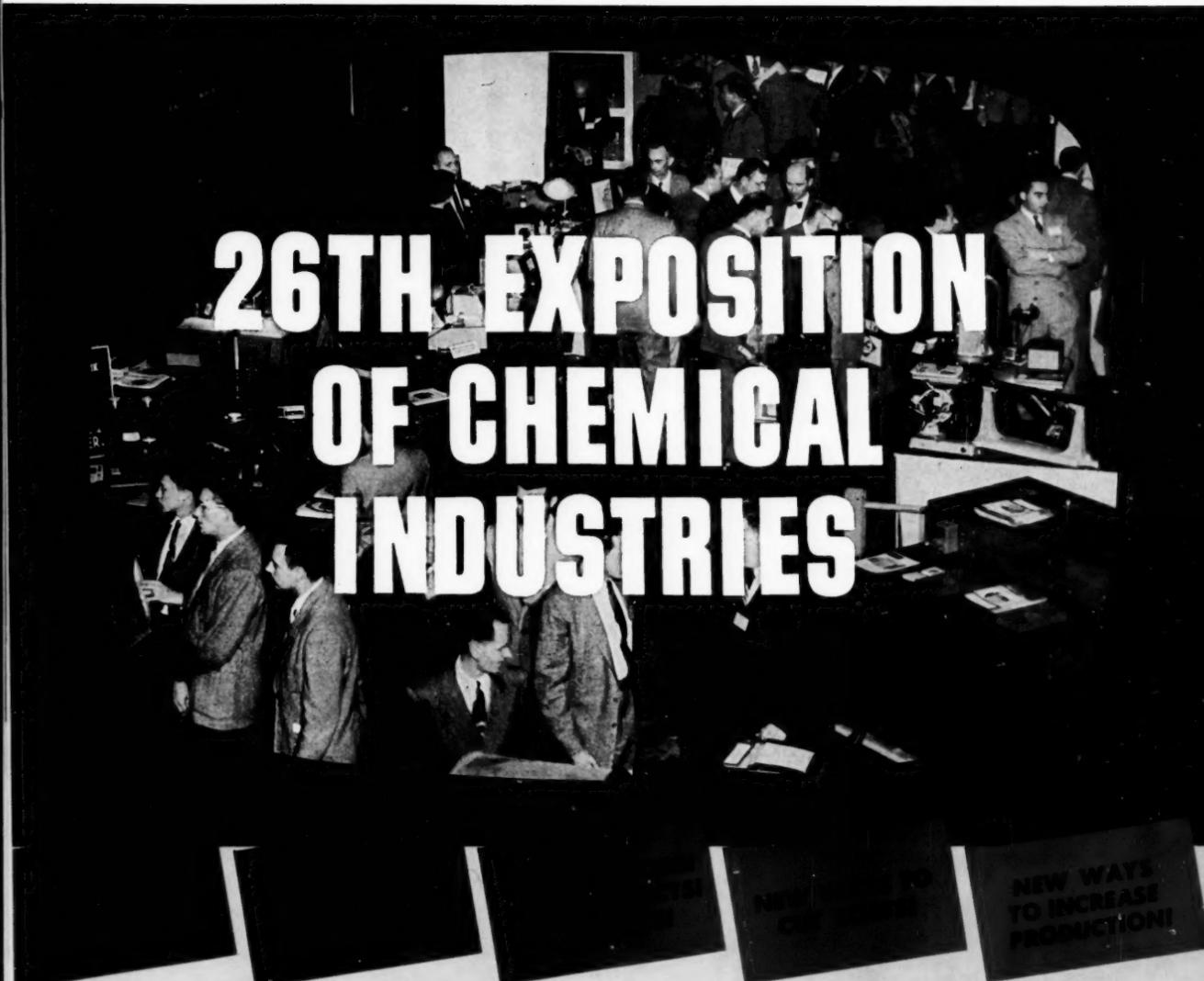


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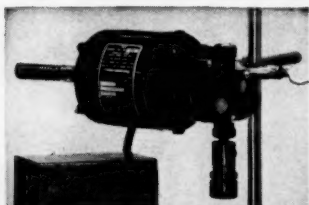
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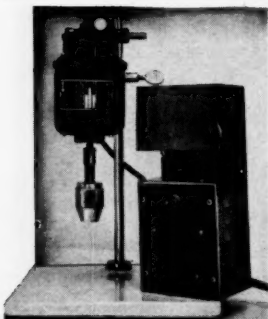
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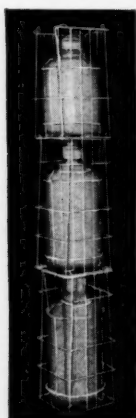
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You can safely stack the 5 or 6½ gallon size and move 4 at a time with a two-wheel truck.

You can store 65% to 100% more in the same floor area.

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- 2. SAVE EMPLOYEES TIME**—Simple and easy to handle this one man package, four at a time moved on an ordinary hand truck.
- 3. SAVE FLOOR SPACE**—Stack 65% to 100% more "Steel-X" Carriers in available space. You can stack them 2-3-4 high.
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- 5. SAVE ON BREAKAGE**—An unbreakable puncture resistant POLYETHYLENE bottle used with carrier means trouble-free distribution of liquid chemicals.
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OPINION

Shell Petrochemicals

TO THE EDITOR: [Re] . . . "Petrochemicals" (CW Report, Sept. 28), we wish to reiterate our disappointment in the omissions and errors made in the survey concerning Shell's primary role in the petrochemical field, particularly as regards acetone, ethanol and glycerine. Although we understand that this type of slip-up occasionally happens, it is regrettable that the errors contained in *Petroleum Processing* were further compounded in the listing of petrochemical producers and products. . . .

W. J. CURRY, JR.

Sales Dept., Shell Chemical Corp.
New York

Reader Curry is justifiably disappointed. Shell was not listed under acetone or ethanol, and its glycerine capacity was understated.—Ed.

Home Permanents Safe

TO THE EDITOR: In your comments on permanent waving research, you have done an injustice to the manufacturers of home permanent waving products by suggesting that their products damage the hair. . . . Ammonium thioglycolate, improperly used, is capable of damaging hair, but the permanent waving products sold by reputable firms are so formulated with respect to pH and concentration that they are safe on the hair when used according to directions.

In the results of thousands of permanent waves given in the experimental beauty shops in our laboratories, I can find no support for your statement that the ". . . hair becomes brittle and breaks. . . ."

MURRAY BERDICK

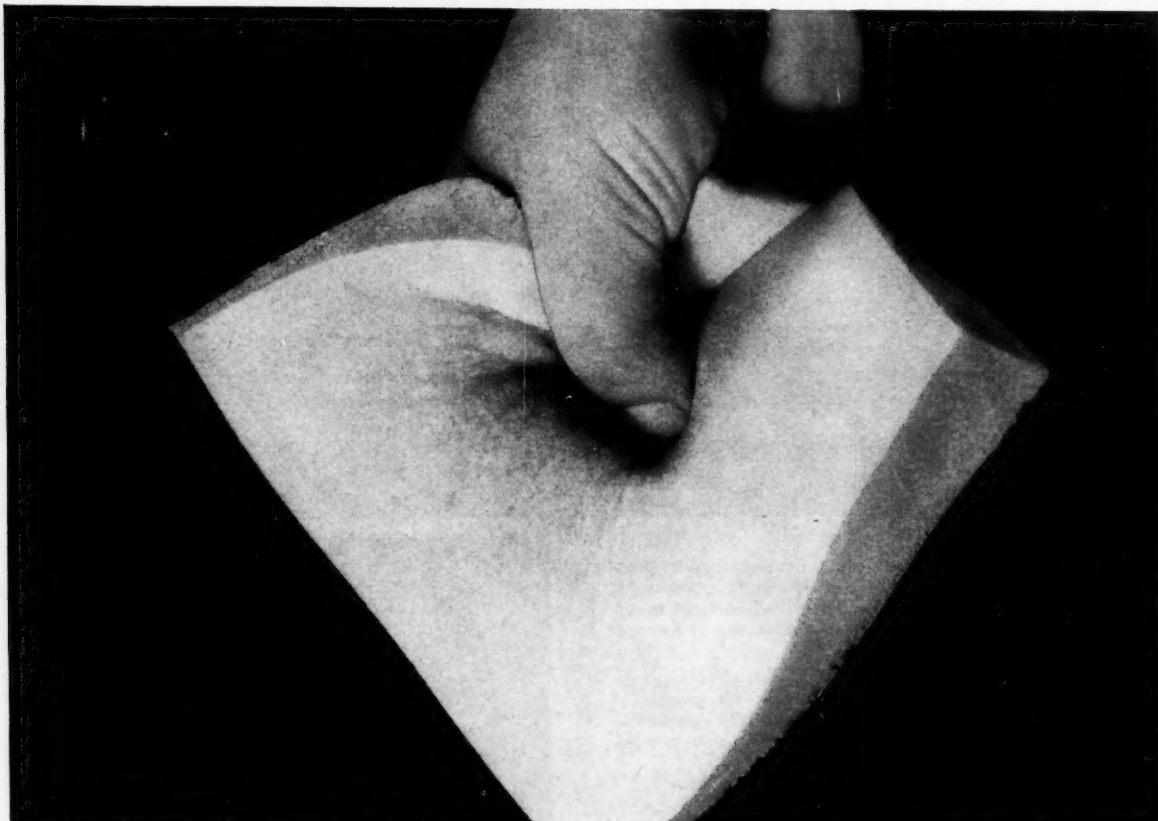
Coordinator of Research
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Corp.
New York

MEETINGS

American Society of Mechanical Engineers, national power conference, Americus Hotel, Allentown, Pa., Oct. 21-23.

Assn. of Consulting Chemists & Chemical Engineers, annual meeting, Belmont Plaza Hotel, New York, Oct. 22.

Technical Assn. of the Pulp and Paper Industry, seventh corrugated containers conference, Benjamin Franklin Hotel, Philadelphia, Oct. 23-24.



Good compression—is one advantage of polyether-based polyurethane foams made from new NIAx Diol PPG 2025. In addition, it helps give foams that are lower in cost than other types of flexible foams.

Now—Lowest cost Polyurethane Foams

from NIAx Diol PPG 2025

TRADE-MARK

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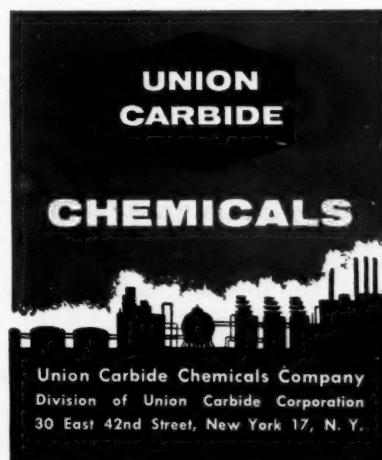
Lowest cost you say? Right! Polyether-based foams, from NIAx Diol PPG 2025 are lower in cost than other types of flexible foams. Therefore, if you are making prepolymer or foam, you'll want to take advantage of NIAx Diol PPG 2025. This new material assures uniform properties of the prepolymer or foam—from batch to batch.

In addition to imparting good compression—deflection characteristics, resilience, and recovery properties, field tests show NIAx Diol PPG 2025 gives the added advantage of excellent humid-aging.

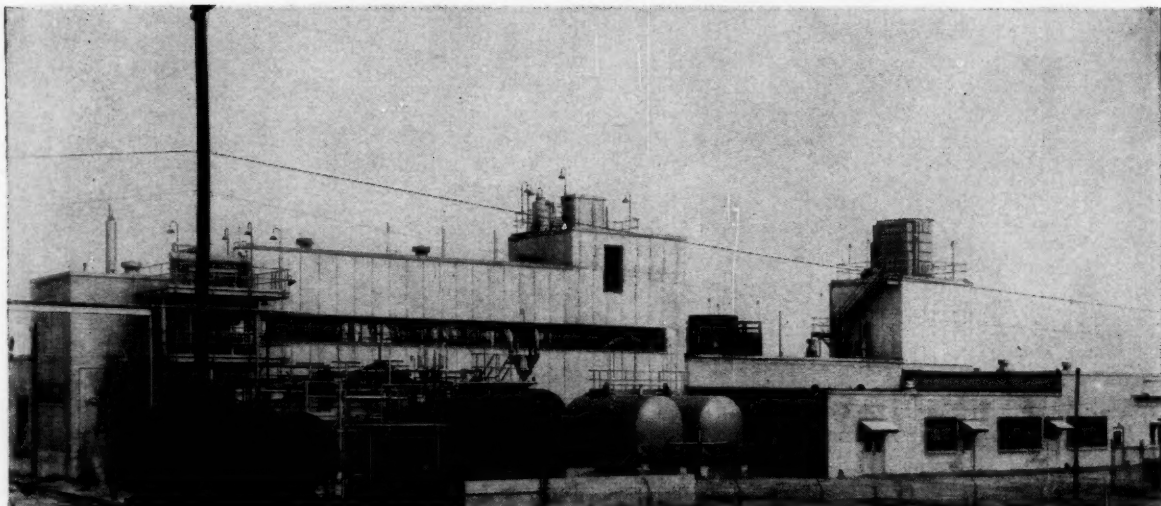
Union Carbide Chemicals Company's NIAx Diols PPG 425, 1025, and 2025 also are bases for other types of flexible and rigid urethane foams.

For samples and specification data on these products, write Union Carbide Chemicals Company, Room 328, Department H, 30 East 42nd Street, New York 17, New York.

In Canada: Carbide Chemicals Company, Division of Union Carbide Canada Limited, Montreal.



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Polyvinyl chloride plant, designed and built for the Insular Chemical Corporation at Hicksville, New York, owned and operated jointly by Ross & Roberts Inc. and Rubber Corporation of America.

Heart of the process consists of reactors equipped with instrumentation for precise control of the process.

How Blaw-Knox builds an idea into a profitable resin plant

The idea: improve production of vinyl film and sheeting by integrating a polyvinyl chloride resin plant into the operation.

The problem: could such a plant be built to deliver the capacity required for profitable performance.

Blaw-Knox was asked to analyze the problem in detail. Their economic and engineering studies proved the idea feasible . . . pointed the way to a pilot plant to determine formulation data.

Then, maintaining close contact with the client,



Blaw-Knox moved ahead with plant construction. This program co-ordinated engineering, procurement, inspection, and cost control.

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Business Newsletter

CHEMICAL WEEK
October 19, 1957

More "selling" of the chemical industry on community levels is the tonic that's prescribed by Manufacturing Chemists' Assn. President, John Hull to combat misconceptions about the industry that have arisen among legislators and the public.

Hull made the point Monday at the Sixth Chemical Sales Clinic of the Salesmen's Assn. of the American Chemical Industry.

MCA will start industry activity committees as year-round extensions of Chemical Progress Week to provide a nationwide base for informing the public about the industry. The association will provide information and material highlighting the industry's significance and its place in the economic life of the U.S.

•
Should Interhandel's claim to ownership of General Aniline have been thrown out of court? The Supreme Court this Monday agreed to consider the Swiss holding company's request to review lower-court decisions that dismissed its suit. The Supreme Court, in accepting the case, asked the company and the Justice Dept. to concentrate on the question of whether it was proper for a lower court to dismiss the case because of Interhandel's failure to produce documents, when this court did not concurrently find that Interhandel "refused to obey" an order to produce the documents. Interhandel had said it could not produce the documents because of Swiss banking secrecy laws.

On the other hand, the court refused to review lower-court decisions that denied injunctions requested by independent Interhandel stockholders to bar sale of GAF stock by the U. S. government.

Meanwhile, U. S. government officials have agreed to tell the International Court of Justice that the U. S. feels the GAF matter is a domestic issue not arbitratable by that agency (*CW*, Oct. 12, p. 47).

•
Smith, Kline & French stock was listed on the "big board" Monday, as market trading commenced on the New York and Philadelphia-Baltimore Stock Exchanges. Nearly five million shares of common stock were admitted to trading.

•
More briefs have been filed in the calcium chloride antitrust suit brought by the state of Wisconsin against Allied Chemical, Dow, Pittsburgh Plate Glass, Columbia-Southern, Wyandotte and others. Counsel for the manufacturers—who are charged with colluding in bidding for sales of the material to Milwaukee County—seek dismissal of the antitrust suit on grounds that the concerns were engaged in interstate commerce and so could not be charged with violations of the Wisconsin antitrust law.

Business

Newsletter

(Continued)

Contrasts mark early third-quarter earning reports.

• Dow Chemical provided the high spot. Its net earnings for the three months ending Aug. 31 were up 20.3%, to \$14.1 million, compared with the third quarter of 1956. Sales were up 2%, to \$166.3 million.

• Allied Chemical, with a 10% increase in sales (to \$171.8 million), saw its over-all net income rise to \$18.6 million after taxes, 49% over the mark of the comparable three-month figure last year. A capital gain from the sale of 184,600 shares of U.S. Steel stock, however, added about \$7.8 million to the \$10.7 million netted from sales.

• Monsanto also made a 10% gain in sales, to \$139.6 million, and hiked earnings 29%, to \$8.8 million, in the three-month period.

• Diamond Alkali, though it increased sales, dropped in earnings. Over nine months of '57, Diamond has made net sales of \$97.6 million, a 2% increase over '56, but earnings have declined 22%, to \$6.1 million. Sales for the third quarter were \$32.4 million; earnings were \$1.5 million.

• Hooker dipped in both sales and earnings. Nine-month sales were \$79.9 million, down 2.7% over last year, and nine-month income was \$6.4 million, a 30% drop from the comparable figure of '56. Its third-quarter sales were \$26.1 million; net, \$1.9 million.

•
Monsanto is moving to its new headquarters this week. It's shifting headquarters from downtown St. Louis to a 252-acre site in Creve Coeur, Mo., 20 miles outside the city. Manufacturing will be continued at the company's in-city location.

•
Grand Central Rocket Co. will put \$1 million into new facilities at its Redland, Calif., plant. The firm, engaged in the U.S. Vanguard earth satellite program (*see also p. 31*), will build test units and offices as well as propellant mixing and rocket assembly plants.

•
Major step toward ending the government's antitrust action against lead producers came last week, with American Smelting and Refining Co. agreeing to end alleged monopolistic practices. Asarco and St. Joseph Lead Co., two largest domestic producers of lead, were charged by the U.S. Dept. of Justice with monopolistic business practices; Asarco agreed to the consent judgment to "avoid the expense and burden of protracted litigation." The case against St. Joseph is still pending.












•
First chemical firm to utilize water resources of Bushy Park, S. C. (*CW, June 29, p. 21*), will be Cardinal Mfg. Co. Cardinal, a small supplier of organic chemicals, purchased 10 acres of land, optioned 20 more.

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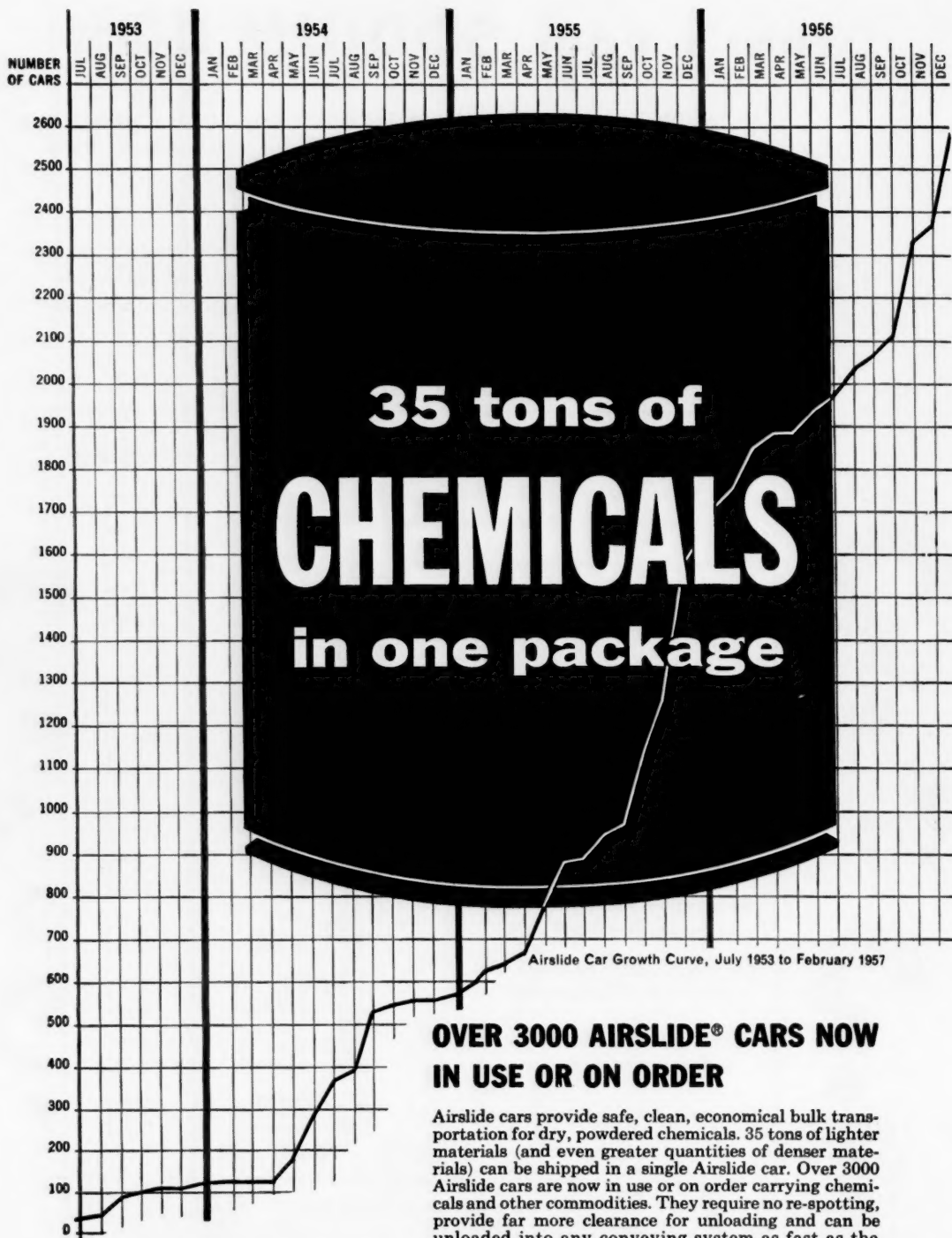
The literature below will answer many of your questions. Check the items of special interest to you. Attach the box below to your letterhead and mail to: Ethyl Corporation, 100 Park Avenue, New York 17, N. Y. Your copies will be sent promptly.

Question	For the Answer	Check Here
What other metals can sodium produce?		"Sodium Dispersions" <input type="checkbox"/>
How quickly will sodium hydride descale steel?		"Sodium Hydride Descaling" <input type="checkbox"/>
How is sodium azide made?		"Chemistry and Uses" <input type="checkbox"/>
What food is treated with sodium alcoholate?		"Sodium Alcoholates" <input type="checkbox"/>
What well-known dye is made with sodium amide?		"Sodium Amide" <input type="checkbox"/>
What alloy is liquid at room temperature?		"Sodium Alloys" <input type="checkbox"/>
What high energy fuels can you make with sodium hydride?		"Sodium Hydride" <input type="checkbox"/>
Does sodium reduction of fatty esters affect unsaturation?		"Fatty Alcohols for Industry" <input type="checkbox"/>
Can dibasic acids be made with alkyl sodium compounds?		"Alkyl Sodium Compounds" <input type="checkbox"/>
What glycols can be made with sodium acetylides?		"Sodium Acetylides" <input type="checkbox"/>
Can sodium be shipped in tank cars?		"Handling 'Ethyl' Sodium" <input type="checkbox"/>

CW 10-19-57



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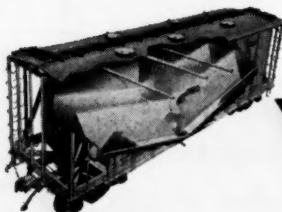


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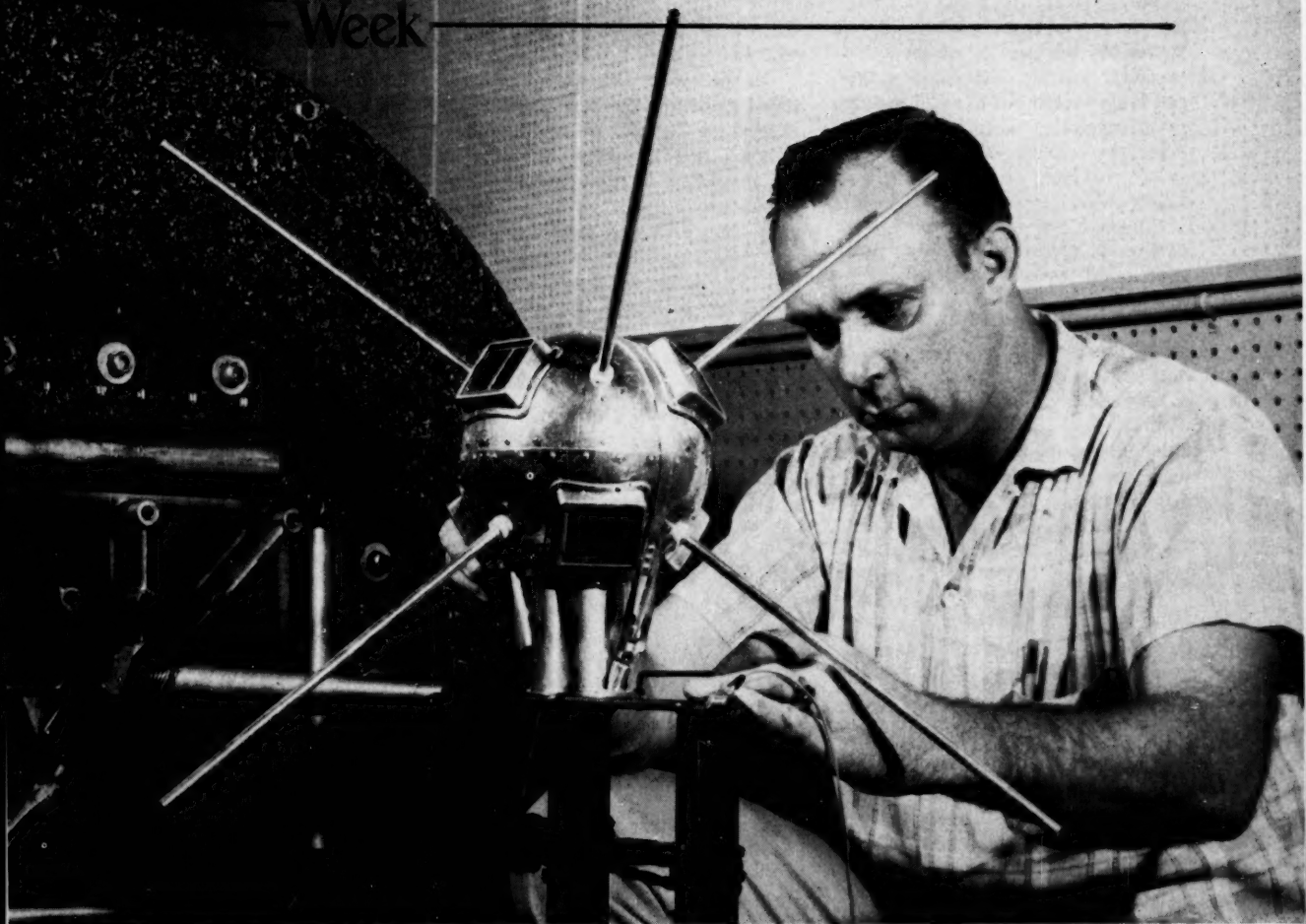
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Six-inch U. S. satellite is readied by technician for pressure-testing, while . . .

Missile Program Readies for Overhaul

Now that the dust stirred up by Russia's space satellite is settling this week, two conclusions of special significance to the chemical process industries are coming through: (1) Sputnik was not propelled aloft by a high-energy (e.g., boron) fuel; (2) responsibility for development and production of long-range missiles will be centralized, in an attempt to make it easier for participating companies to deal with the Defense Dept.

Main point: without minimizing Russia's achievement, U.S. chemical executives don't believe the U.S. chemical industry has been technologically outmaneuvered. Most executives queried by *CW* feel that, though Russia's Sputnik is without question a substantial scientific triumph (*CW*,

Oct. 12, p. 46), the U.S. is still ahead in several important phases of missile development.

One field of superiority frequently mentioned is high-energy fuels. Though some contest it, consensus of most experts is that no new or exotic fuels were used in Sputnik's launching missile. Reasoning is this: either Russia built a tremendous rocket, weighing about 200,000 lbs. or it had to use ultraenergy propellents with five or six times the thrust of any now made in the U.S. Since Moscow—not averse to spectacular statements—recently said it had fired a long-range ICBM and didn't claim to have any usable high-energy fuels, experts think that conventional propellents were used.

Companies such as Olin Mathieson, National Distillers, Foote Mineral and others known to be active in high-energy fuels are restricted from commenting on their progress, won't speculate on Russia's position.

Good Impression: But the general tenor of discussions with high-energy fuel experts leaves the impression that the U.S. is moving fast in this field, may soon have a variety of more powerful propellents. "Look for some important new developments very soon," said one official of a large high-energy fuel contracting firm.

Nor does Russia's success seem to mean that U.S. processors are lagging in new metallurgical techniques. The satellite is probably an aluminum or titanium alloy—nothing that is un-

known in the U.S. However, if the Soviets do manage to launch a "returnable" satellite, that is, one they can bring back down to earth without its disintegrating when it hits atmosphere, the satellite would have to be constructed of a new alloy—one that hasn't yet been revealed, if discovered.

Outcome: For the CPI, an important result of Sputnik is the probable shakeup of government missile supervision that may lead to more centralized control over development and production of long-range ballistic missiles.

Officials admit certain interservice rivalries have caused delays in the missile program. Hope is to eliminate them, set up a single missile agency to make it easier for chemical processors and other companies with missile program contracts to deal with the Defense Dept.

And new Defense Secretary McElroy, at his first press conference last week, spoke of "eliminating bottlenecks," reportedly by going ahead with the single-agency plan. Company executives, exasperated by the multiplicity of missile agencies, enthusiastically approve this scheme.

But though the reorganization could cut much red tape, both McElroy and Wilson have intimated that it won't mean any increase in actual spending on missiles, including Vanguard.

Such contractors as Hercules Powder, Shell Oil, Martin Co., National Research Laboratories, Aerojet-General and Grand Central Rocket Co.—all concerned with a portion of Project Vanguard—report they've received no speedup orders from the Defense Dept.

Admittedly, these contractors bid on Vanguard chiefly because of its prestige value. Profits from it will be small and probably will turn into losses before the program is over. They feel there's still plenty of prestige in readying the theoretically superior U.S. satellite.

The industry, far from discouraged, is looking forward to rapid development. Although it's certain, they say, that Russia spent a great deal of money and concentrated much of its scientific talent on development of Sputnik, over-all U.S. know-how—now being amassed—will provide the depth for more rapid scientific achievements later on.

ICWU Backs Cleanup

On the eve of this week's International Chemical Workers Union convention in Detroit, President Walter Mitchell said his union would fully support AFL-CIO drives against labor corruption.

In an exclusive interview with *CW*, Mitchell said, "I completely concur with George Meany and with the AFL-CIO desire to rid the labor movement of undesirable elements. This task is too important to be left to government agencies alone; it must be one of the prime concerns of all unionists."

He went on to point out that ICWU was one of the first to invoke the ethical practices code against a maverick Eastern local, looks on the code as a welcome weapon against those who keep corruption just beyond the law's reach.

As to direct condemnation of Teamsters union activities and those of Jimmy Hoffa, its leader, Mitchell is cautious. Like many other labor leaders, he must both give and get cooperation from the teamsters at a local level to aid in making ICWU strike threats effective. Teamsters' importance to ICWU looms largest in the East, due to concentration of package pharmaceutical houses.

Merger Note: On the question of merger with the larger Oil, Chemical & Atomic Workers, Mitchell told *CW* that it was "both desirable and inevitable." He said, however, that immediate action would be premature because OCAW has not yet fully "digested" certain recent acquisitions of its own.

"With only a third of American chemical workers organized," Mitchell said, "both unions have a big job ahead. We would also like to bring in some of the really independent 'independent' groups, such as at Procter & Gamble and Du Pont." The potential for unionization, he thinks, is slightly less than a million members. ICWU has 100,000.

Otto Pragan, ICWU research director, agreed that chemical strikes are more numerous (*CW*, Aug. 17, p. 47), attributed this to industry growth.

Pragan also commented that "because of the diversified nature of our industry," he does not see the four-day week as an immediate possibility for ICWU.



P&G's Morgens: The charges are against good business.

P&G Monopoly?

The Federal Trade Commission, continuing its stepped-up program of monopoly probing, has brought another large corporation under fire—this time it's Procter & Gamble. FTC has filed a complaint charging that P&G violated antimerger laws when it purchased Clorox Co., maker of the biggest-selling household bleach in the U.S. Hearings are scheduled to begin in December.

The commission bases its charges on the premise that P&G has set up such an enormous advertising and promotion network in the U.S. that other makers of household bleaches will be squeezed out of business.

P&G President Howard Morgens answers the charges this way: "The basic grounds for the complaint is that P&G advertises widely, is successful, and has gained broad acceptance of its products." He contends that "this is basic to success of American business, large and small."

Until now, FTC has largely attacked only two types of acquisitions: (1) involving a supplier and a producer, and (2) involving firms competing against each other.

The charge made against P&G is a third type, known as "conglomerate," which involves the merger of firms making different, noncompeting products into one diversified firm. No case has yet been successfully prosecuted under laws covering this kind of merger.

High Court Facing Big Issues

The U. S. Supreme Court's new fall term got under way this week. Because of a large holdover from last term, a record number of cases may be handled. Antitrust and labor relations present the big issues before the court.

Antitrust: The court will make a number of important rulings on the Robinson-Patman Act and its price discrimination provisions. An important test is the appeal by the Federal Trade Commission in its prolonged battle with Standard Oil Co. of Indiana. FTC and Indiana Standard have been battling since 1940 over interpretation of the "good faith" pricing clause of the Robinson-Patman Act. A decision against FTC could touch off a round of demands by small-business interests for tightening the price discrimination sections of the act.

What Makes Antitrust Law? Perhaps as important as the "good faith" case are two cases that pose the issue of whether section three of the act is, technically, an "antitrust law." If it is, then a company may bring triple-damage suits against a competitor for violating its ban on certain kinds of price-cutting. The court has agreed to resolve the issue.

The outcome could have tremendous impact on triple-damage suits. Even the courts agree that the Robinson-Patman Act is so vague that businessmen often cannot tell until after the event whether an action violates the law. Up to now, there has not been an authoritative ruling by the Supreme Court on whether section three can be used as a basis for triple-damage suits.

Another key ruling is coming on the rights of the Justice Dept. in pressing antitrust suits based on grand jury investigations. At stake is the government's right to use material from a grand jury investigation—when no indictment is returned—as part of civil monopoly charges. The practical result of a decision against the government would be increased efforts by the Justice Dept. to obtain special new subpoena powers for the Attorney General.

Labor Relations: Important decisions in the field of labor-management relations are coming up. Over 50 cases involve labor disputes and conflicting claims. Among the major cases:

- **On arbitration:** The court will rule on whether or not federal courts may agree to arbitrate differences arising in negotiating terms to be included in a new contract.

- **Strike vote clause:** The National Labor Relations Board wants the court to rule that an employer may not insist on a contract clause forbidding strikes unless approved by a majority of union and nonunion workers.

- **Damages against unions:** Two unions are fighting state court rulings that the Taft-Hartley Act does not pre-

vent states from awarding money damages to workers against unions for the loss of wages caused by illegal strikes.

In another area, operations of General Aniline & Film may be affected by the court's decision concerning the rights of the Justice Dept. to proceed with sale of 75% of the stock it holds in the company.

In the pharmaceutical field, the court will rule on whether a person may hold a manufacturer liable for damages suffered by contracting serum hepatitis from an injection of blood plasma. The claim is against Merck & Co.



FRANK AMELIA

MCA Surveys Labeling Practices

The Manufacturing Chemists' Assn. last week held its first Precautionary Labeling Conference* since 1949, took a look at upcoming legislation and reviewed progress already made in labeling the ever-growing galaxy of hazardous chemicals and chemical products.

Panelists said that, in substance, the legislation now before Congress puts the onus for proper labeling squarely

on the manufacturer, and the legislative result will probably be a bill with wide flexibility in its definition.

MCA's Labels and Precautionary Information Committee has taken no official stand, but it's no secret that many members favor the flexible bills now in Congress.

While few admit a fondness for any compulsory regulation, they feel that a single reasonable federal law, drawn up with the benefit of the industry's experience, is better than a welter of conflicting and confusing state and local laws.

*MCA panelists who addressed the session include (left to right) Chester French, Malinkrodt; John Williamson, LAPI committee chairman, American Cyanamid; Nicholas Walker, Pennsalt; Ralph Troup, of J. T. Baker; and Edward Hogan, conference chairman Allied Chemical.

EXPANSION

Ammonia: California Ammonia Co. (Lathrop, Calif.) will add a new 100-tons/day ammonia plant to its facilities in Lathrop. The new unit is designed to yield hydrogen by steam-reformation of methane. The process, similar to that used by Brea Chemical Co. at Brea, Calif., and by Phillips Chemical Co. at Pasco, Wash., provides for recovery of oxygen and nitrogen as by-product gases. Plant completion date is Oct. '58. Cost: \$4.8 million.

Paper: International Paper Co. has started up its \$1.8-million paper mill at Raleigh, N. C. The new plant employs 60 persons; if expansion plans materialize, labor requirements will double.

Isopentane: Phillips Petroleum Co. is now blueprinting an isopentane unit at its Borger, Tex., plant, where it processes natural gas liquids. The plant will convert normal pentane (octane No. 85) into isopentane (octane No. 105) by Universal Oil's Penex process. Capacity: 13,500 bbls./day of the high-octane material. New facilities should be ready in the first quarter of '58.

Food Additives: The Glidden Co. (Cleveland) is planning a \$4-million plant in Indianapolis, Ind., to produce a soybean-derived protein used as a food additive. The new three-story plant will be operated by Glidden's Chemurgy Division. Construction is scheduled to get under way this month.

COMPANIES

Chemway Corp. (Mountain View, N.J.) is boosting its authorized capital stock from 2 million to 10 million shares; but Chemway President Charles Sillo-way says the firm, as yet, has no plans to issue additional stock.

National Gypsum Co. has purchased Connecticut Adamant Plaster Co.'s gypsum-products plant in New Haven, Conn. Price was not disclosed, but is estimated at well over \$1 million.

Jefferson Lake Sulphur Co. has withdrawn its registration with the Securities & Exchange Commission for the sale of 150,000 shares, "because of present market conditions." The stock sale, originally scheduled for Sept. 8, was "temporarily postponed" late last month following sulfur price reductions by Freeport Sulphur and Texas Gulf Sulphur (*CW Business Newsletter*, Sept. 28).

Petrocarbon Chemicals Inc. (Santa Barbara, Calif.) and Pleasant Valley Wine Co. (Hammondsport, N.Y.) have agreed to merger terms, subject to stockholders'

approval. Each share of Pleasant Valley would be exchanged for one-fifth share of \$30 preferred and one common share of the proposed new company, Great Western Producers, Inc. Petrocarbon shareholders would get one share of the new company stock for every six shares of Petrocarbon stock that they currently hold.

Olin Mathieson Chemical Corp. will sell its marine terminal at Burnside, La., to the Greater Baton Rouge Port Commission for the latter to operate as a public facility. Still under construction on the east bank of the deep-water section of the Mississippi, the terminal is scheduled for completion next March. Terms of the transaction call for purchase price not to exceed \$15 million, with financing to come from revenue bonds.

Union Carbide Chemicals Co., Quebec division of Carbide Canada Ltd., has opened a \$25-million plant in Montreal East, Que. The new unit will convert petroleum-refinery gas concentrates into polyethylene and ethylene derivatives, some of which are new to Canada.

FOREIGN

Industrial Gases/Australia: Pacific Oxygen Ltd. will start operating an oxygen-acetylene plant in the spring of '58 in Melbourne. Scheduled output: 15 million cu. ft./year of acetylene, 50 million cu. ft./year of oxygen. Pacific plans to build another plant in Sydney to make the same materials.

Imports/Australia: In spite of increasing Australian chemical output, imports are still at high levels. In its fiscal year 1956-57, Australia imported 6.5 million lbs. of phthalic acid, 201,758 cwt. of calcium carbide, 67,824 cwt. of tetraethyl lead, 8.2 million lbs. of styrene monomer and over \$20 million worth of drugs and medicines.

Fertilizers/Pakistan: A group of French companies—Societe Ensa, St. Gobain, Societe Chimique de la Grande Paroisse and Societe Potasse et Engrais Chimiques—will build a \$32-million ammonia-from-natural gas and ammonia fertilizer works in Pakistan. The ammonia unit will produce 200 tons/day, of which half will be converted into urea, and half into other ammonia fertilizers.

Caustic Soda/Chile: The Chilean Corp. for Production Promotion (CORFO) will build a Solvay process soda plant in Trapaca, Norte Grande, Chile. The \$4-million facility will begin operations by '60, is expected, by '62, to have an annual capacity of 65,000 metric tons of soda, of which 50% will be made into sodium hydroxide and bicarbonate.



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Phosphoric

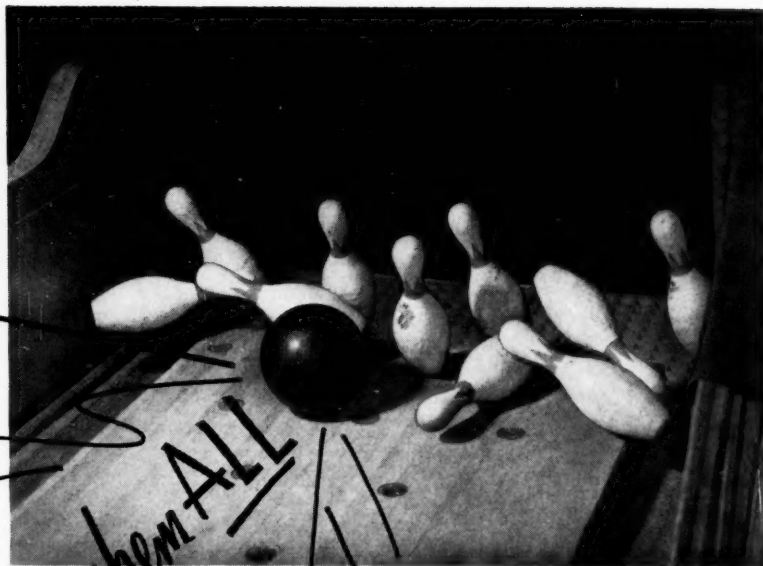
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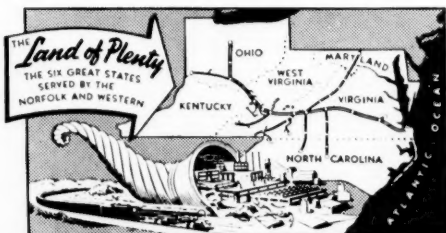
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Newsletter

CHEMICAL WEEK
October 19, 1957

Don't look for a sudden step-up in missiles spending. It takes a highly imaginative reading of recent statements by Administration leaders to find even a hint of a hike in spending or of a major speedup in present schedules. The plain fact is that the policy-makers are satisfied with the size and pace of the program as it now stands—see nothing to be gained by laying out more money.

Washington is putting nearly \$3 billion/year into guided missiles development and production—well over half of which is ticketed for long-range ballistic missiles—the IRBM-ICBM rockets. The earth-satellite project—which is being handled separately from the military rocket programs—is taking another \$110 million or so, an amount that will be spread over the project's two-year life. There's nothing to indicate that any of this spending will be increased.

Improving the management of missiles work is something else again. The new Defense boss, Neil McElroy, may decide to centralize administration of ballistic missiles activity, install a "czar" with control over the separate Army, Air Force and Navy projects. Or, he may settle on some sort of advisory committee approach to better coordinate the program. So far, talk of centralizing control is speculative. But, the important point is that such measures amount to no more than an organizational revamping—not a change in basic goals.

Washington may put more stress on basic research. U.S. scientists have been unhappy with the attitude of the Pentagon, under production-minded Charles Wilson, toward fundamental research. Their complaints are not new—but the headlines playing up Russia's scientific achievements in rocketry naturally have raised questions about the adequacy of U.S. research, both basic and applied, and have provided our scientists with a chance to get their case before a wider audience.

The complaints take two forms: defense spending on basic research is too low—accounting for some 5-10% of the over-all \$1.6-billion research and development budget; and, the budgets for basic work lack flexibility, making no allowance for exploiting scientific breakthroughs. The scientists would welcome a close, hard look by budget officers at the merits (and financial needs) of individual projects—even if this means greater year-to-year variation in spending authority. In fact, one of their bigger gripes is that funds for basic research show such a stable level year after year; they cite this as proof of "arbitrary" budget-making by Pentagon higher-ups.

The Pentagon may take a more sympathetic approach toward these complaints, now that McElroy has replaced Wilson. At his first press conference after taking the helm, the ex-P&G boss described himself as "a fellow conditioned to feel that we must support speculative

Washington Newsletter

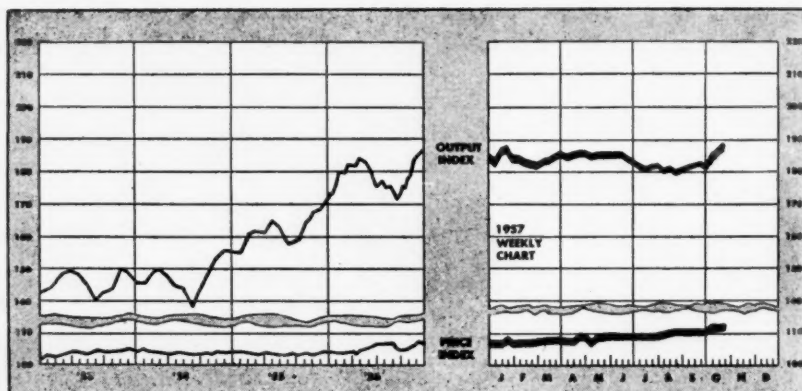
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thinking by high-grade scientists. You won't find me on the side of cutbacks in basic research. I'm sympathetic to emphasizing the speculative, innovational kind of research." This marks a sharp departure from Wilson's oft-quoted disclaimer of any interest in why potatoes turn brown when fried and why spinach is green.

But, McElroy hasn't committed himself to spending boosts on fundamental research. He's on record as opposed to cutbacks—something that hasn't been seriously proposed and isn't likely to be, now that Sputnik is whirling around the globe. Nonetheless, his statement has given a strong psychological boost to U.S. scientists. It remains to be seen whether McElroy—when faced with the recommendations of Pentagon budget officers—will back his words with action.

No new research contracts are currently being let—but this doesn't indicate opposition to basic research. The Pentagon has clamped down on contract awards, pretty much across-the-board, while carrying out a close review of all outstanding projects; some have been canceled and others stretched out. But, all this is tied to Wilson's order to roll back this year's spending to the authorized \$38-billion level from the \$42-billion/year rate it had reached a few months ago.

The review should be completed later this fall. And then, Defense Dept. research agencies will be free to let new contracts.



Business Indicators

WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-49=100)	189.5	189.0	177.6
Chemical Week wholesale price index (1947=100) ...	111.0	111.0	105.6
Stock price index of 11 chemical companies (Standard & Poor's Corp.)	40.18	41.08	45.62

MONTHLY

	Latest Month	Preceding Month	Year Ago
Employment (thousands)			
All manufacturing	16,917	16,968	17,121
Nondurable goods	7,199	7,157	7,333
Chemicals and allied products	839	831	839

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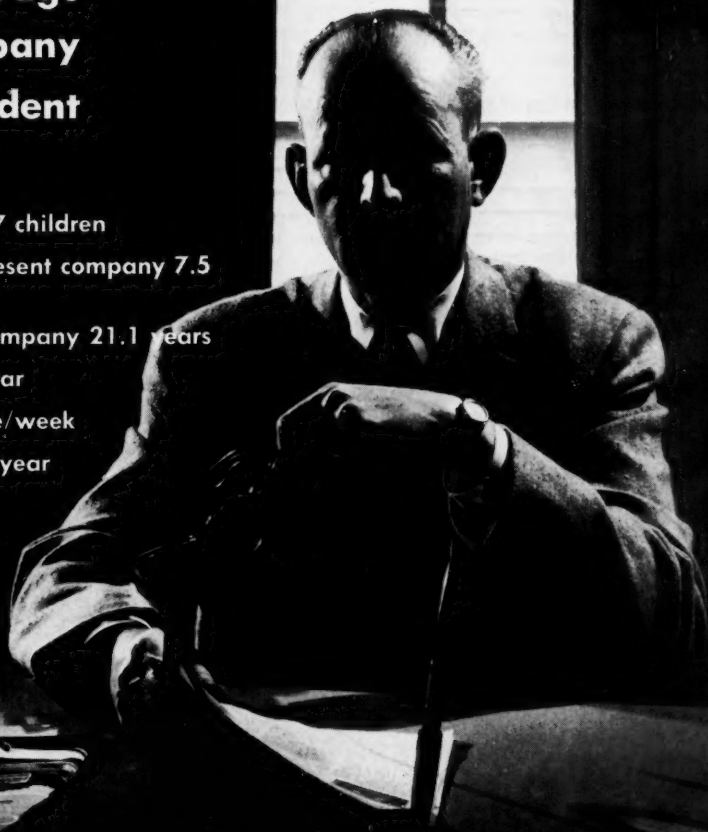
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Closeup of a \$65,400/Year 'Average' Man

The "average" chemical company president does twice as much business traveling as other corporation presidents, and he gets a little less pay.

In other respects, this hypothetical creature is almost a carbon copy of his statistical counterpart in other industries: he's just past 50 years of age, has a wife and two or three children, owns his own home and two or more cars, and works about 15 hours beyond his company's normal work week.

These and other facts are revealed in a just-completed *CW* compilation of facts and figures on 35 chemical process company presidents, part of an American Management Assn. sur-

vey of 335 member-company presidents in 40 states in the U. S. and six countries.

While the survey reveals many similarities between chemical chief executives and those of other concerns, it also points up some significant differences.

For example, the "typical" chemical company president earns \$65,400 a year, slightly less than the \$68,000 average for chief executives in other industries. This difference, in part, however, reflects the difference in gross sales of the companies involved in the survey. The 35 CPI companies, for example, have average annual gross sales of \$38.3 million, compared with

\$65 million a year for the rest of the concerns reporting.

Another difference: chemical company presidents, on the average, travel about twice as much—almost 11 weeks each year—as do presidents in nonchemical lines.

Areas of Concentration: Marketing, production and finance appear to be the chief spawning grounds for presidential talent in all companies. One-fourth of the surveyed chemical presidents worked their way up through finance, while production and marketing each contributed 22% of the top men. Engineering accounted for 9% of the chemical company presidents, and legal and general management

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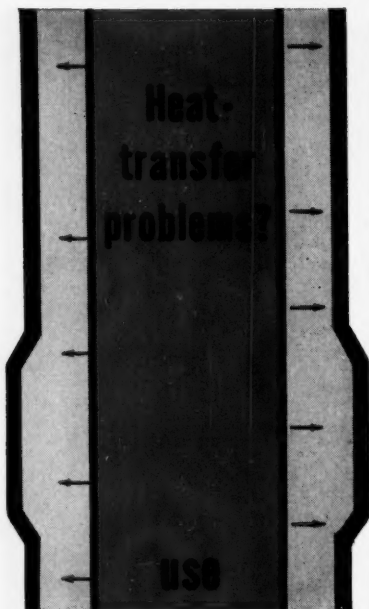
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ADMINISTRATION



The average president is a golfer; he likes to watch football.

contributed another 6% each. The others (10%) came from sales, chemistry and various junior management positions.

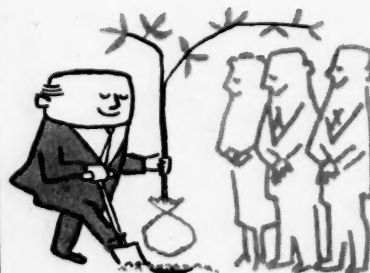
College Degrees Aplenty: Twenty-four (69%) of the 35 chemical company presidents were graduated from college, about equal to the seven-out-of-10 score for all presidents. The groups were tied in the number of presidents—two out of 10—who received graduate degrees.

Bachelor of science degrees were most common in both groups of presidents, outnumbering bachelor of arts degrees two to one among CPI presidents, and one and one-half to one among others.

Chemical engineering was the most popular degree among chemical men, followed closely by mechanical engineering. Electrical and civil engineering degrees were received by two presidents each. Business administration and history were the most numerous B.A. degrees.

Economics was considered the most valuable course by both groups of presidents, and chief chemical company executives included chemistry as an equal choice for most valuable subject taken.

Surprisingly, however, chemical



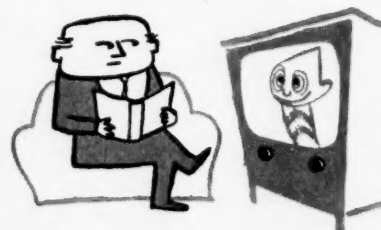
He gives 12.3 hours each month to civic and church projects.

presidents joined presidents in general in preferring a straight liberal arts course for young men seeking executive careers. Business administration tied with science and engineering as the second choice of chemical company presidents.

Humble Beginnings: Horatio Alger stories abound in all businesses, and chemical presidents are able to claim their share. First full-time jobs for these men run the gamut from researcher to cow poke, with the majority of chief executives getting their start in sales or as office clerks.

Chemical industry presidents hold a slight edge in length of service with their present companies, with an average of 21.1 years—compared with 16 years for presidents in general.

In addition, chemical company presidents have been executives an aver-



He reads for relaxation two hours a day, watches TV for 40 minutes.

age of 20.9 years, and have been presidents an average of 7.5 years.

Presidents in both groups make every effort to spend as much time with their families as possible, and the two to four weeks spent each year on vacation are centered around family activities.

Wide Range of Hobbies: Hobbies and interests appear pretty much the same for presidents wherever you look. Golf is the most favored activity, followed by fishing, hunting and bridge. In addition to these mainstays, a host of activities were listed by chemical men, including trap shooting, sailing, tennis, swimming, curling, flying, skiing, and gardening.

Favorite chemical president spectator sport is football by a wide margin, with baseball a second choice. Model airplane building and politics received mention as favorite hobbies.

Reading for relaxation gets about two hours a day from presidents in both groups, and the chemical pres-



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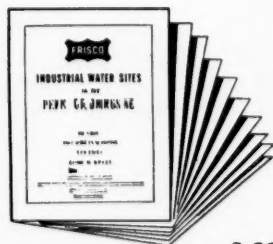
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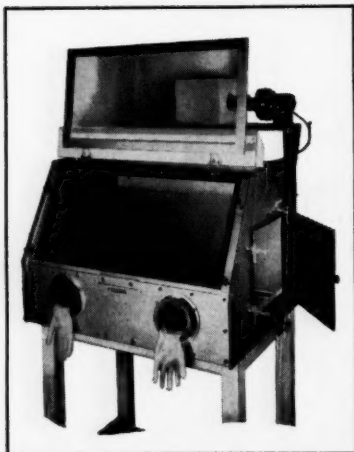
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ADMINISTRATION

idents watch television only about 40 minutes a day.

Presidents in both groups are generous in donating their time to church and community projects. Eighty-three percent of all presidents give time to community activities, 63% work in church projects. Chemical process company presidents, almost to a man, devote some time to such activities, contributing an average of 12.3 hours a month.

Lack of time is an inherent problem with all presidents, and training and working with people is listed as an additional major problem of chemical company presidents. Two presidents each listed coordinating executives and communicating with the management team as being their foremost problems.

For the most part, presidents of chemical firms appear satisfied with their careers; only a few would change if they had it to do over again. Per-



*One chemical president's ambition:
to conduct a symphony orchestra.*

sonal ambitions listed reflect the satisfaction, and are concerned primarily with travel.

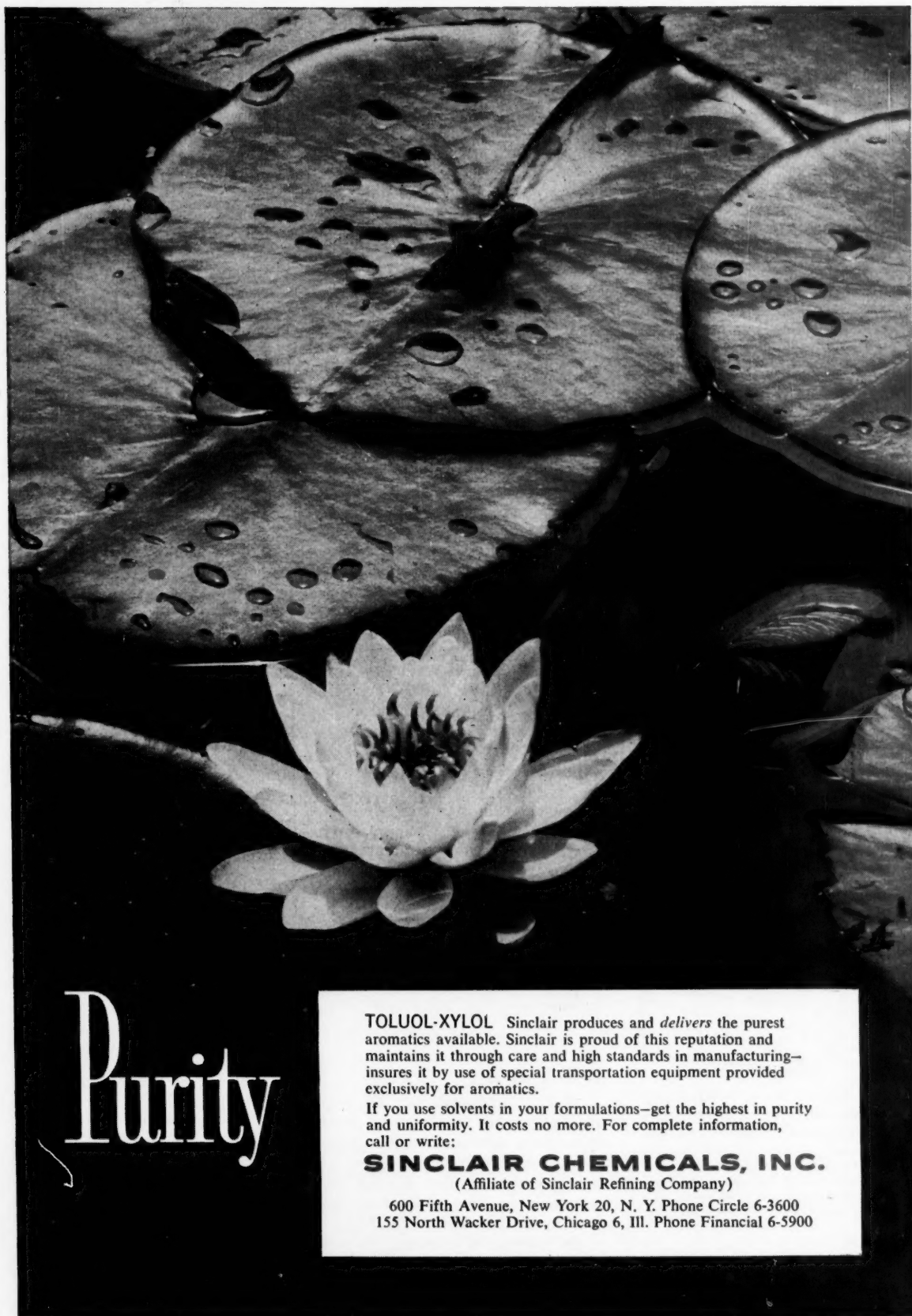
Other personal ambitions include flying a jet, going to college, learning to play a musical instrument, leading a large orchestra, and sailing around the world.



Three-Way Teamwork at Tamaqua

At Tamaqua, Pa., this week they're paying tribute to a three-way understanding—among management, employees and the community—that has helped Atlas Powder Co. keep its nearby Reynolds plant on a competitive basis even after a big drop in the local market for the plant's explosives. The economy of Tamaqua—a 125-year-old town of about 12,000 population, some 75 miles northwest of Philadelphia—used to be geared to the

fortunes of the hard-coal mining industry in eastern Pennsylvania. That the Atlas plant has kept operating and even expanded since the anthracite industry slumped was cited at a recent Chamber of Commerce banquet as a major triumph for that organization's labor-management relations program. Greeting Atlas President Ralph Gottshall (*fourth from right*) at that banquet: Chamber President Anthony Maff.



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ADMINISTRATION

LABOR

Productivity and Pay: More pronouncements about wages, productivity, prices and inflation are coming along each week, indicating the amount of sober thinking that industry leaders are devoting to these problems. Economists of the National Assn. of Manufacturers (New York), after studying available data, conclude that average hourly pay is up 61.4% from 1947, whereas productivity has risen only 26.1% over the same period; and that the spread between these two graph-lines has been "a major contributing factor to the upward price trend."

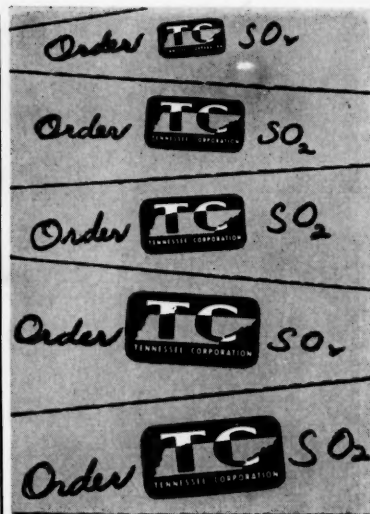
And from the head of an engineering concern comes a suggestion for reducing the divergence between pay and productivity. Harry Toulmin, Jr., chairman of the board of Commonwealth Engineering Co. (Dayton, O.), holds that manufacturing companies should divorce themselves from the handling of fringe benefits that are more in the line of an insurance company or a governmental social security agency.

Toulmin recommends that manufacturing companies set up—in trust companies or other separate organizations—those "insurance-type plans" by joint contributions of labor and capital. Then, he goes on, wages could be pegged more closely to productivity.

Employee Stock Offering: At Midland, Mich., Dow Chemical Co.'s board of directors has authorized an offering of 200,000 shares of common stock to Dow employees (only the directors are ineligible). This will be the ninth employee stock purchase plan since the company adopted this program some eight years ago. Participation in previous offerings has generally been more than 40%.

LEGAL

Du Pont Trademark Suit: Du Pont has filed suit in U. S. district court (New York) seeking to enjoin Purofied Down Products (New York) from representing that pillows and comforters or other goods manufactured by the defendant are sponsored by the Wilmington company. The suit also seeks to enjoin Purofied from using the words Daron, Dacrilan, Daran, Dacron and Acrilan, or any



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Du Pont's complaint charges that use of the marks or their variations by the defendant is for the "wilful purpose of constituting deception . . . and diverting and appropriating the plaintiff's business and goodwill."

Officials at Purofied told *CW* the firm is "strongly contesting" the Du Pont suit, and added that it has had pending for several years applications for registration of the tradenames in question.

New Secrecy Suit Round: Jerome Spevack, New Rochelle, N. Y., inventor, told *CW* last week that he has filed petition in U. S. court of appeals (Washington, D.C.) for a rehearing of his suit to block Atomic Energy Commission disclosure of his heavy-water and deuterium process (*CW*, Oct. 5, p. 52). The move automatically stays the court's order to dismiss the suit.

According to Spevack, his petition is based on two points:

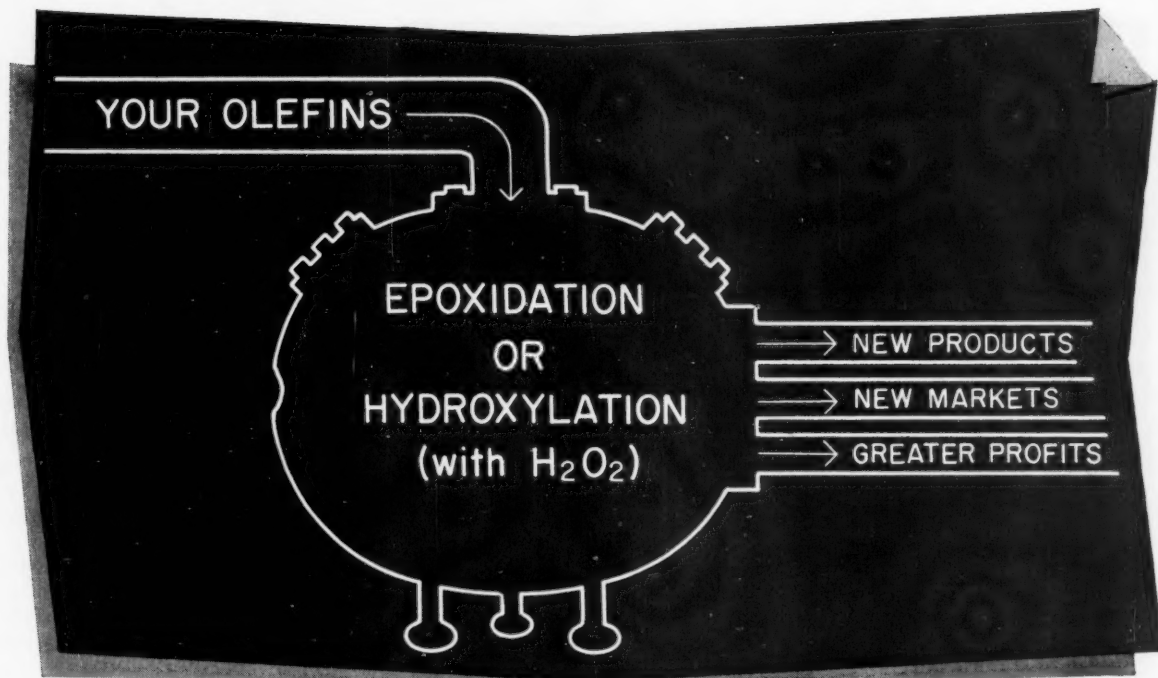
(1) That AEC is exceeding its authority, and thus comes under the jurisdiction of the federal court.

(2) That the Atomic Energy Act of 1954 is unconstitutional in that it provides for depriving an individual of his rights without due process of law.

IDEAS

See It Yourself: Instead of making a speech to a group of security analysts, Minnesota and Ontario Paper Co. (Minneapolis) recently took 15 security analysts on a see-for-yourself tour of the company's principal operations. The analysts—hailing from New York, Boston, Minneapolis and St. Paul—traveled by plane, train, cruiser and auto in visiting Mando's mills at International Falls, Minn., and at Fort Frances and Kenora, Ont.

Preview for Townspeople: To show what its now-abuilding \$5-million chemicals plant will mean to the town of Henry, Ill., B. F. Goodrich Chemical Co. (Cleveland) recently flew a group of townspeople to Calvert City, Ky., for a one-day inspection of the company's facilities there. The eight Henryites toured the plant and the community, noted the measures taken for plant safety and for pollution control.



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ADMINISTRATION

KEY CHANGES

Frederick A. Gilbert, to president, Westvaco Chlor-Alkali Division; and **Franklin Farley**, to management consultant to chemical divisions; Food Machinery and Chemical Corp. (New York).

Robert R. Daly, to president, Miracle Adhesives Corp. (Bellmore, L.I., N.Y.).

Paul A. Murphy, to director, Catalin Corp. of America (New York).

Bruce J. Bennett, to vice-president in charge of production; **James S. Murray**, to vice-president; **S. Becker Treat**, to vice-president in charge of sales; **Mark W. Eichelberger**, to executive vice-president and treasurer; and **Howard E. Kremers**, to secretary; all of Lindsay Chemical Co. (West Chicago, Ill).

Richard F. Hopkins, to vice-president, Texas City Chemicals, wholly owned subsidiary of Smith-Douglass Co. (Norfolk, Va.).

Richard O. Roblin, to general manager, Commercial Development Division, American Cyanamid Co.

Karl W. Mueller, to executive vice-president, Crown Cork & Seal Co. (Baltimore).

William O'Brien, to manager, Fine Chemicals Division, Shulton, Inc. (Clifton, N.J.).

William J. Houston, to vice-president in charge of marketing, Nuodex Products Co., a division of Heyden Newport Chemical Corp. (New York).

Charles H. Churchill, to executive vice-president and general manager, Pacific Polymers, subsidiary of American Latex Products Corp. (Hawthorne, Calif.).

RETIRED

Thornton Chase Burwell, vice-president—traffic, A.E. Staley Mfg. Co. (Decatur, Ill.).

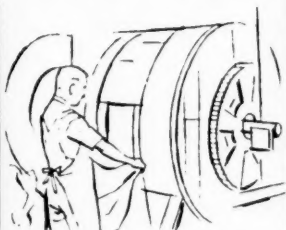
DIED

William Ford Torrey, 46, director and former senior vice-president, Wyandotte Chemicals Corp. (Wyandotte, Mich.), at Savannah, Ga.

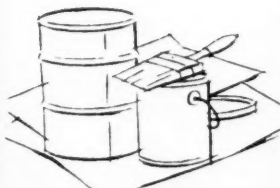
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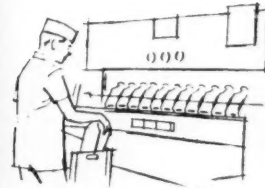
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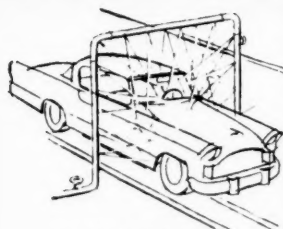
Dyeing and Finishing



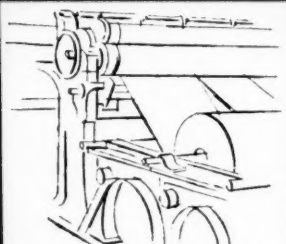
Paint



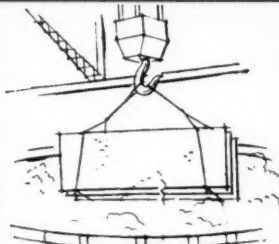
Bottle Washing



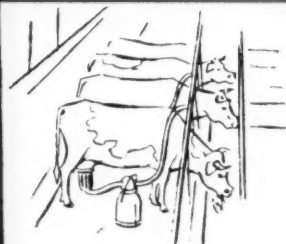
Car Washing



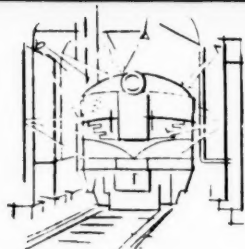
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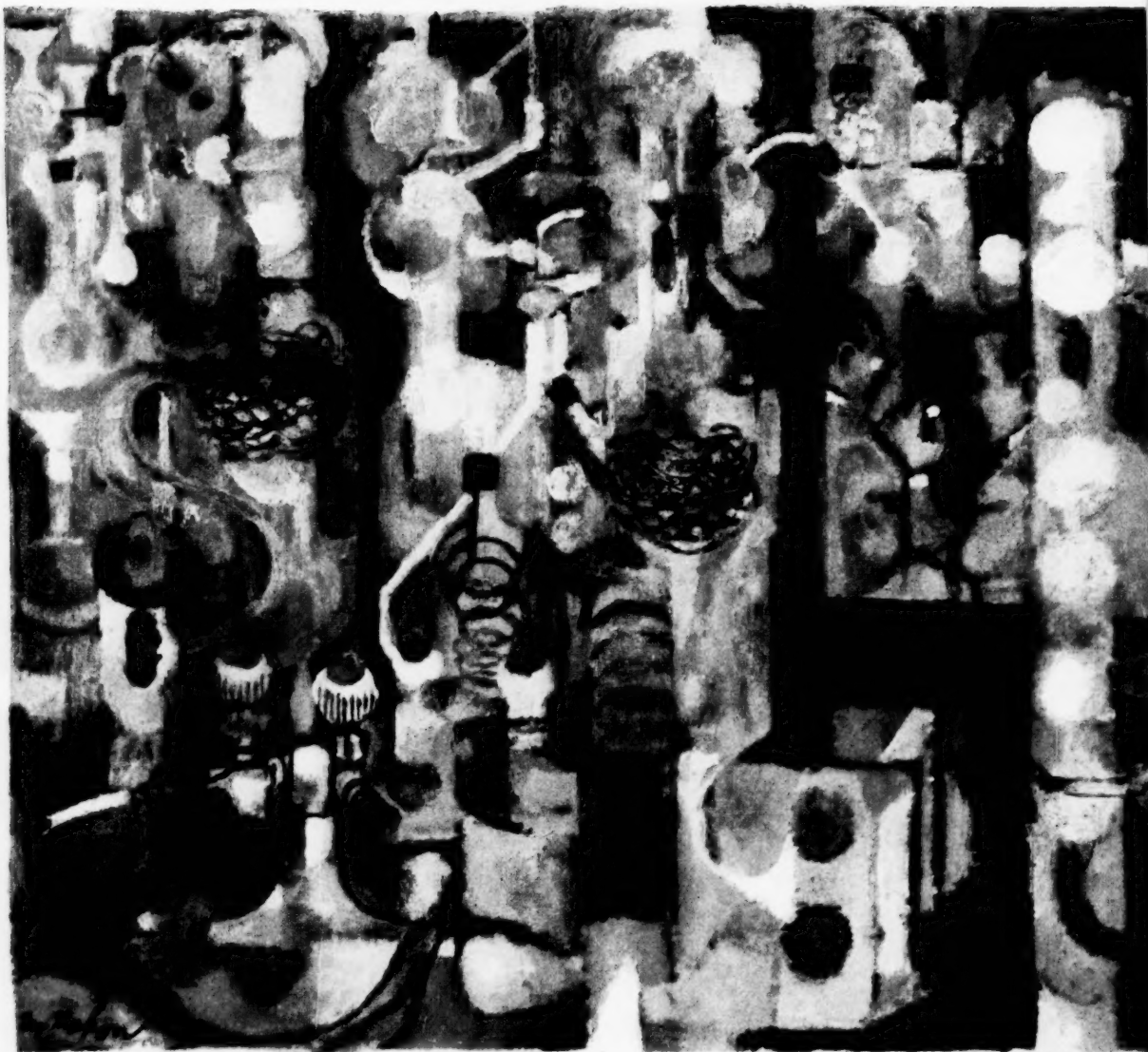


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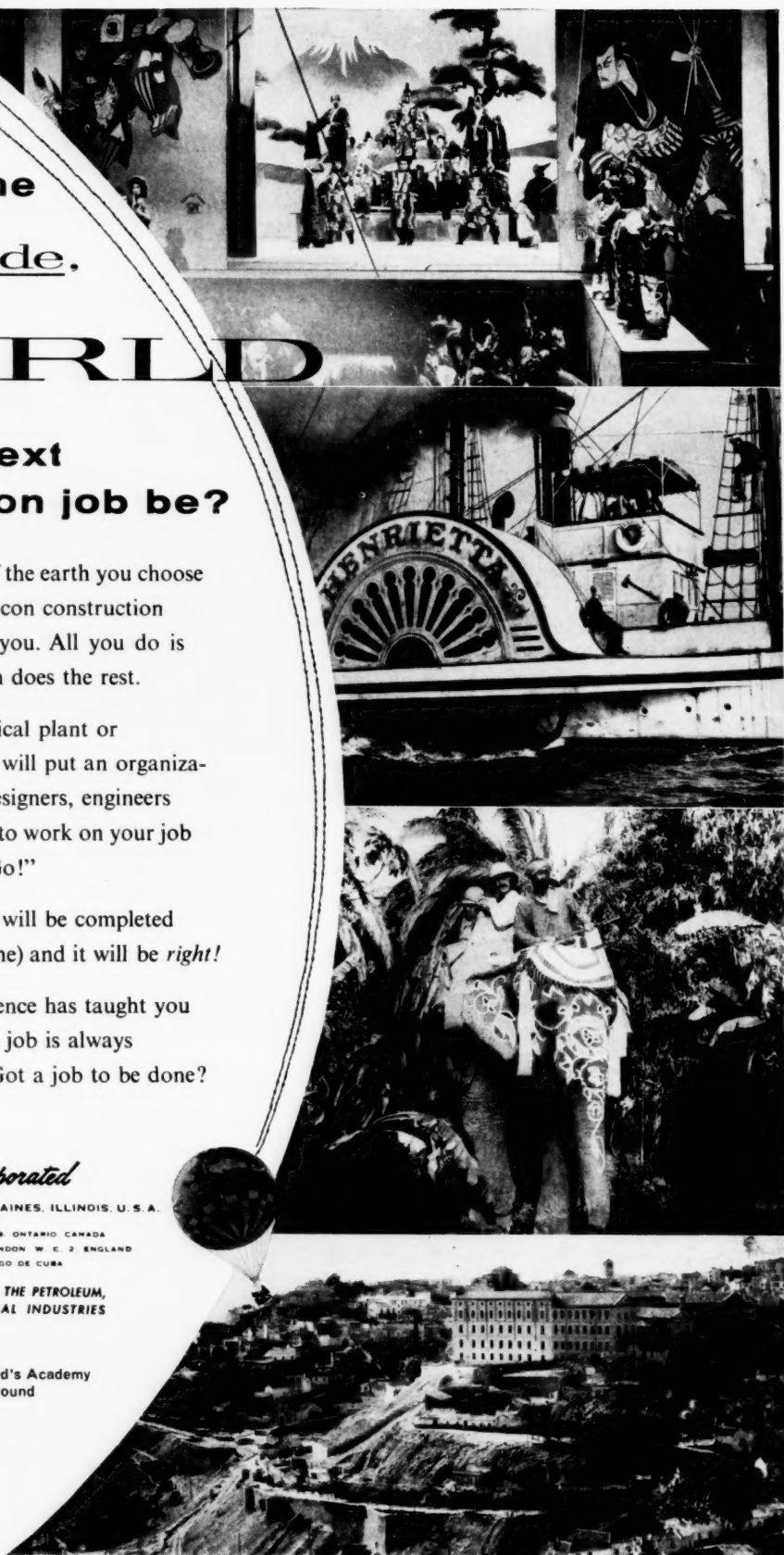
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CW PHOTOS—LIONEL CRAWFORD

Truland Chemical's new East Rutherford, N.J., plant looks like a typical distillation plant, but . . .

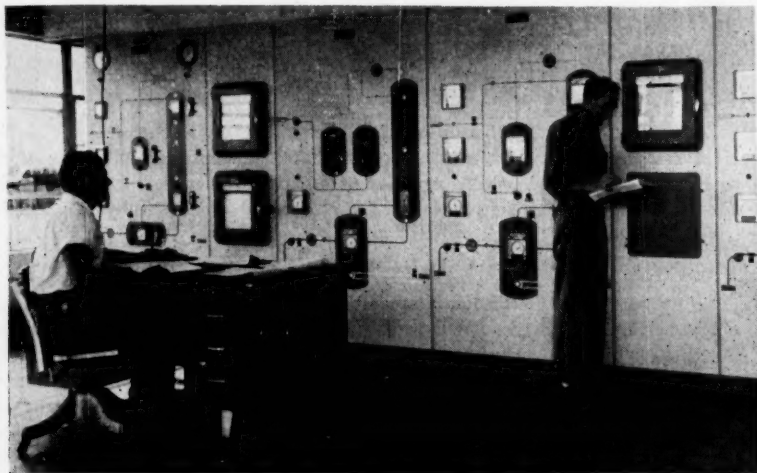
Electronic Controls Are the Difference

This week, the new distillation plant at Trubek Labs' Truland Chemical Co. division in East Rutherford, N.J., is being prettied up—process piping is being painted, roadways are being paved. What's happening on the outside is a fitting followup to the stream-

lining that has been built into the interior—notably the control room, where electronic circuits have eliminated the maze of instrument air lines. The Truland plant's controls are completely electronic—it's the first plant of its type to have this feature.

Completely electronic controls aren't brand new. Some plants have had trial loops, a few permanent loops, for several years. But few firms have been willing to go all the way. Most have compromised on loops that are part electronic, part pneumatic, have

Operators control process units from panelboard (left) with all-electronic instrumentation (right).



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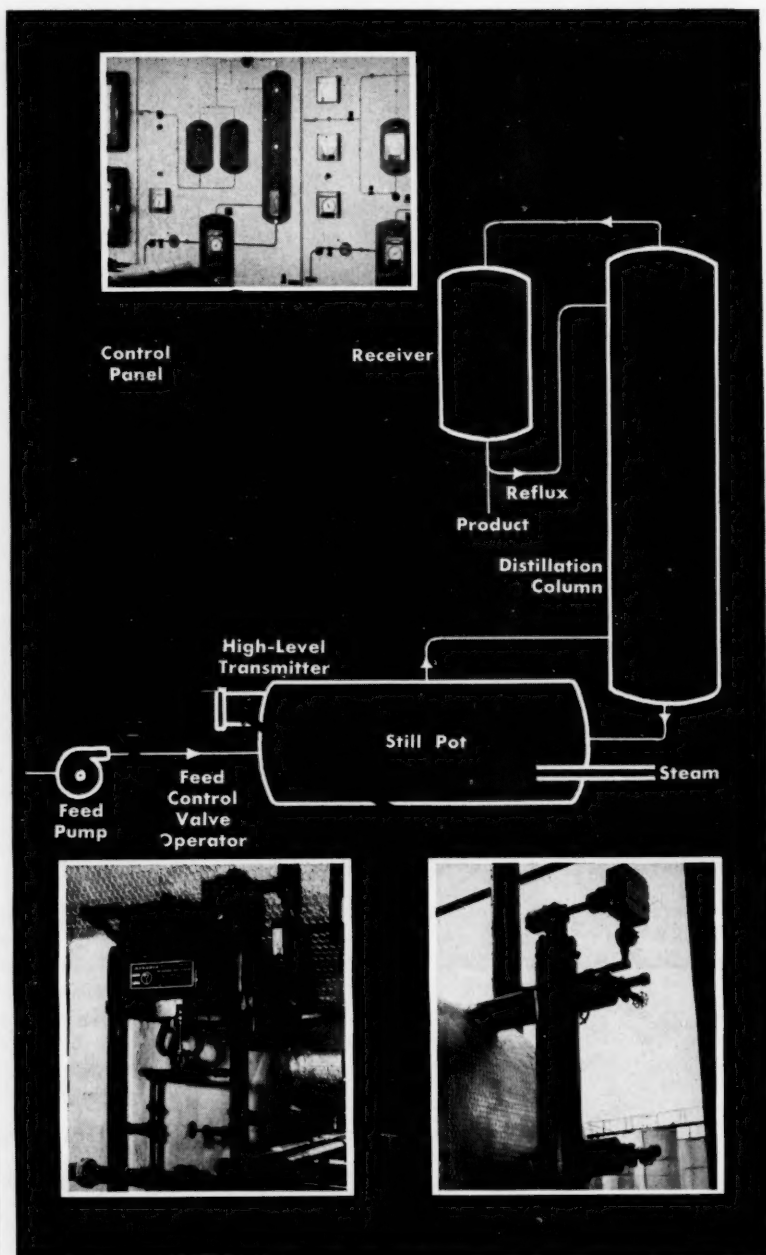
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PRODUCTION



How electronic control loop works: Transmitter on top of still-pot liquid-level sampler (lower right) translates measurement into signal, sends signal to control panel (top), where signal is automatically recorded, compared with control setting. Controller sends signal for correction to electrohydraulic valve positioner (lower left).

gone to completely electronic loops only when the pneumatic components failed to do a satisfactory job.

Ripe for a Gamble: Truland tried out a completely electronic control loop at its Union, N.J., refining plant over a year ago. "It was purely for

educational purposes," says Dan Friedland, Truland vice-president. But the loop's performance completely sold the firm on electronic instrumentation. And when the Union plant was dismantled and a new one put up adjacent to parent Trubek's plant

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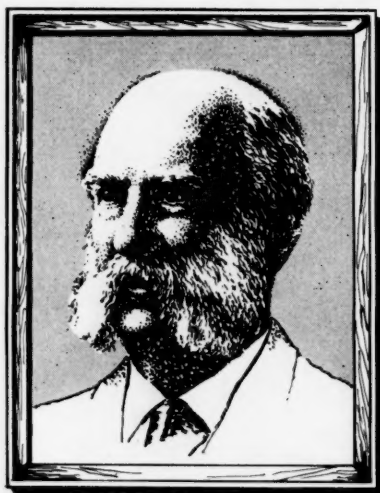
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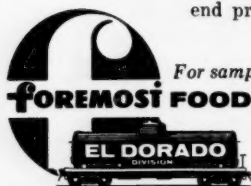
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PRODUCTION

(*CW*, June 23, '56, p. 58), Truland saw the ideal situation for a complete changeover to electronic instrumentation.

In addition to the trial loop's satisfactory performance, two other factors helped tip the scales in favor of the changeover:

First, the East Rutherford plant was built from the ground up. No instrument-air supply was available. On this basis, there was no real cost differential between electronic and pneumatic instrumentation.

Second, Truland had the feeling it was making a technological advance. As M. M. Ward, of Swartwout Co. (Cleveland), puts it: "There is no longer a need to compromise. In completely electronic systems, there is a lack of hysteresis, mechanical drag—response is immediate. This means close control and a stable system."

Swartwout supplied Truland with its Autronic system, introduced in '51. The system includes transmitter, controller and recorder, but not control-valve positioner. Truland uses Askania Regulator Co.'s (Chicago) electro-hydraulic valve positioner. Manning, Maxwell & Moore, Inc. (Stratford, Conn.), also offers a system that, unlike Swartwout's, includes control-valve positioner.

More Than Needed: Friedland says that closeness of control is far beyond the design capabilities of the plant. But this augurs well for completely electronic control in plants that have instrument-air available but must be designed for extremely close, stable process control.

Other features of the completely electronic system that give it a possible edge over pneumatic systems are: freedom from freeze-ups in cold weather, remote control over greater distances.

Wary at First: Truland, however, was not without reservations at first. It was familiar with pneumatic and part-electronic, part-pneumatic instrumentation, feared that a completely electronic system might be too complex for its instrument man to handle. Also, it was concerned that the maintenance load might be heavier.

But its fears proved groundless. In its experience at Union and at the new plant, there have been no maintenance problems. In fact, electronic instrumentation has proved to be simpler than pneumatic.

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PRODUCTION

Friedland picked his instrument man by aptitude testing—the man selected has a high school education, no previous instrument experience. After training by Swartwout, he set up the system, is expected to spend less than half his time with the four units.

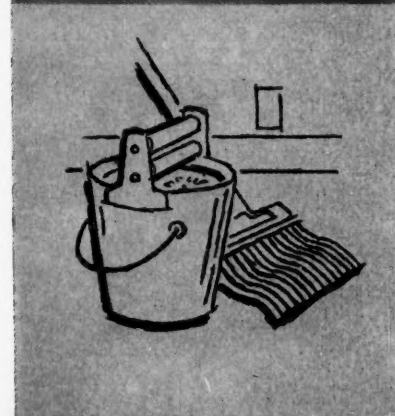
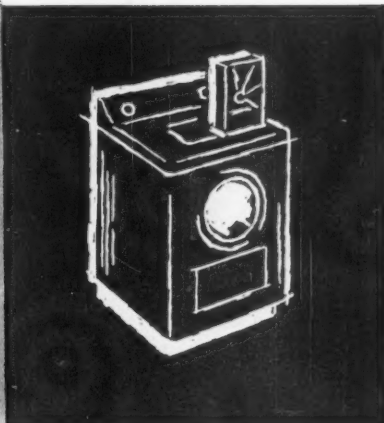
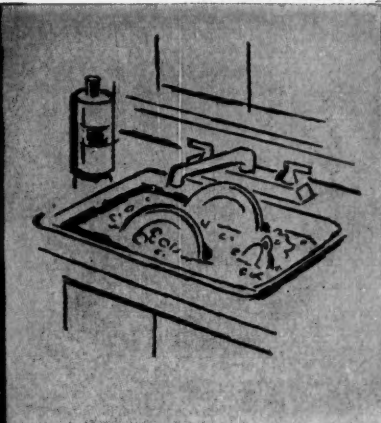
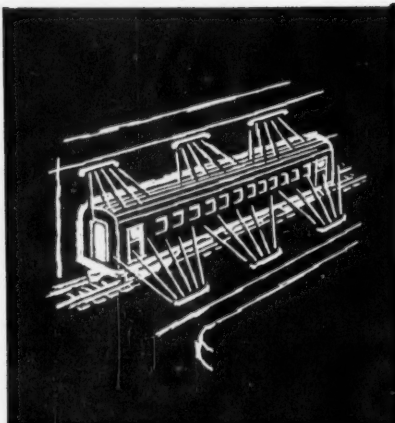
The maintenance assignment was simplified somewhat by design improvements made by Swartwout between installation of the instruments for the first distillation unit and the other three—a period of about eight months. Originally the controller, recorder and manual-automatic control each had its own panelboard cutout. Swartwout combined the recorder and manual-automatic control cutouts, redesigned the controller to plug into the back of the others.

Moreover, printed circuits were adopted. If there is trouble in the controller, for example, each of the four printed-circuit cards may be removed and new ones inserted. If the trouble is not in the circuit cards and there is no break in the complete control loop, the system components are replaced by new ones.

And that's a simple job. Recorder, manual-automatic control and controller are contained in rectangular metal boxes. "When you replace one, it's just like pulling a shoe box off a shelf," says Friedland. Truland has its original loop set aside as a spare.

Truland's results are eye-opening, sure to boost interest in all-electronic control systems. But even the most avid proponents of electronic instrumentation admit there will be no overnight changeover. The factors that must be considered are complex and pneumatic systems are certain to hold their own for some time to come.

Gauge Protector: Superior Hydraulics Div. of Superior Pipe Specialties Co. (Cleveland) offers a new gauge protector for limiting the maximum pressure to which air and oil gauges may be subjected. The protector cuts off flow to the gauge when the system pressure exceeds a preset spring setting, reopens the line when pressure drops below the cutout point. The device also acts as a snubber to prevent gauge damage from fluid hammers, valve chatter, pump pulsations. Spring settings can be preset at any point in the 50-300 psi., or 500-5,000 psi. ranges. The protector is made of brass, has 1/4-in. port connections.



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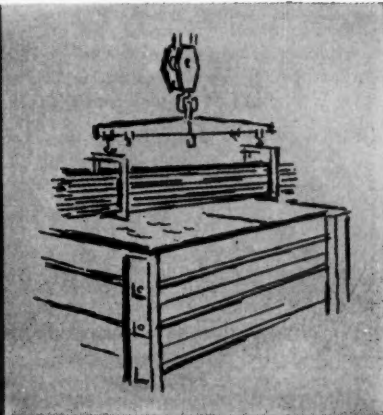
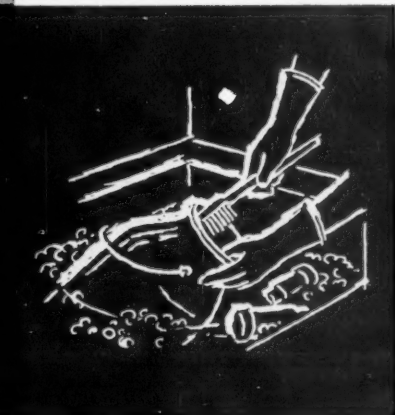
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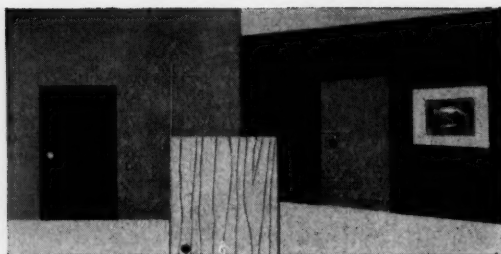
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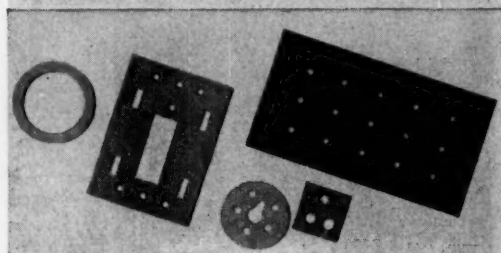
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RESEARCH



Atom bomb tests, such as this one illuminating observers at Frenchman Flat, Nev., are also . . .

Highlighting the Push for Radiation Drugs

The awesome hazard of nuclear bombs might seem reason enough for seeking a cure or prophylactic agent for radiation sickness. But to the scores of investigators in the Atomic Energy Commission, universities and industry, there are other incentives, too. An effective drug would be a big help to X-ray therapists, guarding patients against the cumulative effects of high radiation dosages. And it would be highly welcome in the dispensaries of atomic-research and atomic-power installations.

This week, thanks to research, prospects for such a drug were never brighter. But, right now, it would be difficult to spot a trend from the lineup of hopeful compounds. These range from chemicals such as 2-aminoethylisothiuronium \cdot Br \cdot HBr (AET), ethylenediamine tetra-acetic acid (EDTA), methionine, sugars (glucose, fructose and dextrose), and zirconium citrate, to still-to-be-isolated components in animal blood plasma, human bone marrow and spleen.

Charles Dunham, director of AEC's division of biology and medicine, says there are three approaches to radiation treatment. All are in the exploratory stage. They are: prophylaxis (treatment prior to exposure); treatments that are known to be effective if given up to 48 hours after exposure to the radiation (e.g., bone-marrow transplants have proved very effective in a variety of mammalian species, including mice, rats and monkeys); and removal of radionuclides from the body.

The outlook for prophylaxis is good. Dunham says pretreatment with AET, developed at Oak Ridge National Laboratory (Oak Ridge, Tenn.), is particularly promising. AET was synthesized by Oak Ridge researchers, under David Doherty, who started with the knowledge that certain compounds such as β mercaptan or cystine exhibit some protective action against radiation. Over a three-year period, the group synthesized some 300 different organic compounds in the same structural group, selected AET.

In mice, the effective dose of AET is 400 mg./kg. (which doubles the amount of radiation that can be tolerated).

Some "very cautious" trials have been conducted on humans. AEC's H. D. Bruner, chief of the medical research branch, division of biology and medicine, tells *CW*, "There is every reason to believe AET is protective for man," admits, however, that "its toxicity is greater than we'd like to have it. It's not good enough, but it's still the best of the sulfhydryl group of compounds for preventing radiation sickness."

Because AET is strictly a prophylactic drug, it must—to be effective—penetrate the tissue cells of the animal (or man) before exposure. This presents problems of timing the administration of the drug.

But despite its shortcomings, AET is getting more study—by Richard Overmann, of the University of Tennessee medical school (Memphis), and Gene Weston, at Parke, Davis (Detroit), and others. Meanwhile, the

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RESEARCH



1. Irradiated rat is injected first with rabbit plasma, then Fe-59.

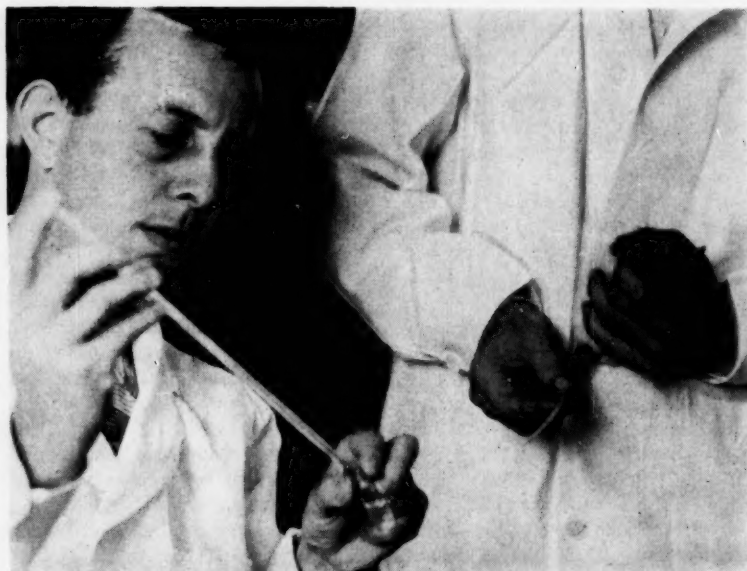
drug is considered too toxic for use by humans. Abbott Laboratories (Chicago) is the only present producer of AET; and Ciba and Smith, Kline & French are researching techniques to keep AET in the body longer (normally 90% is excreted within one hour).

Trevor Robinson, of the Syracuse University Research Institute, is taking another tack to radiation prophylaxis, finds certain sugars will act as a radiation shield. His theory: these sugars protect body enzymes from

radiation damage. This research is sponsored by the U. S. Public Health Service.

And at the Atomic Energy Establishment, Indian Cancer Research Center (Parel, Bombay), methionine has been found to offer some protection to animals when administered before irradiation. However, it is more effective if given after irradiation because it, itself, is destroyed by the radiation.

After Exposure: Treatment after irradiation is the object of a great deal



2. Rat's blood is sampled to check red blood cell growth.

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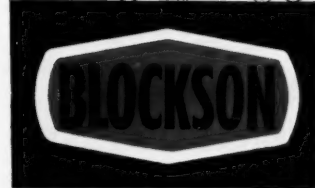
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RESEARCH



3. Scintillometer tracks Fe-59 in sample, shows red cell gains.

of research. Recently, W. H. Linkenheimer and W. C. Grant, nutrition and physiology researchers at American Cyanamid's Pearl River, N. Y., laboratories, revealed successful trials using plasma from the blood of anemic rabbits. They're convinced it stops blood cell deterioration—a major effect of irradiation—helps rejuvenate bone marrow, where the red cells start their growth. Their research technique (*see photos*), is to inject irradiated mice with the plasma, check blood cell formation rate using Fe-59 as a tracer. They believe a

blood hormone, sometimes called hemopoietine, may be the therapeutic agent in the plasma, are trying to isolate it. A pregnant cow's blood also contains an active substance of this sort. Several other drug firms are believed to be researching along similar lines.

Presently, the best known "cure" for radiation overdose is direct injection of fresh bone marrow. But it must be used quickly or it is valueless, and the supply depends on the availability of healthy donors.

Removing the Trouble: The third



4. Lederle's Grant (right), Linkenheimer analyze plasma.

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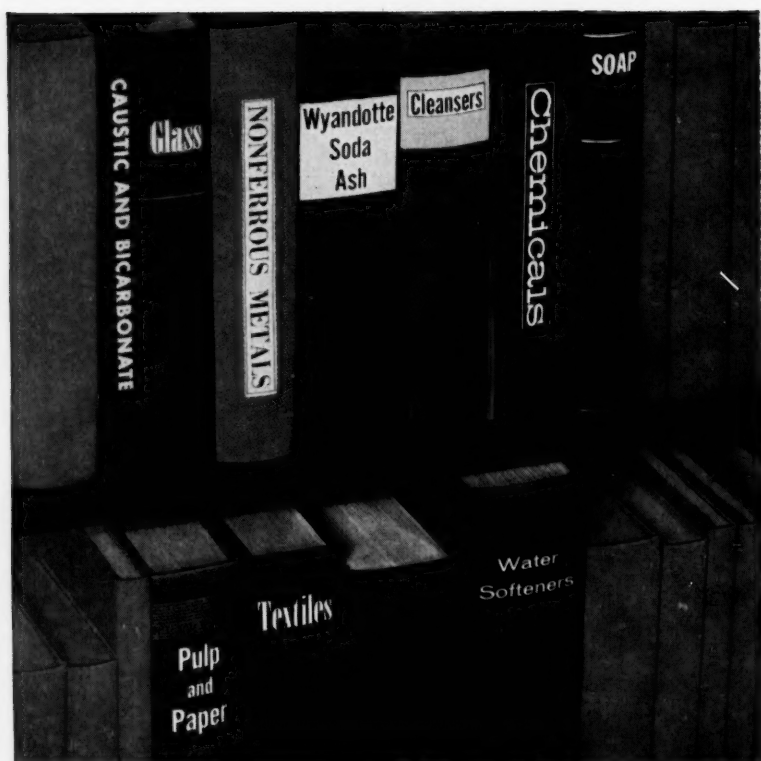
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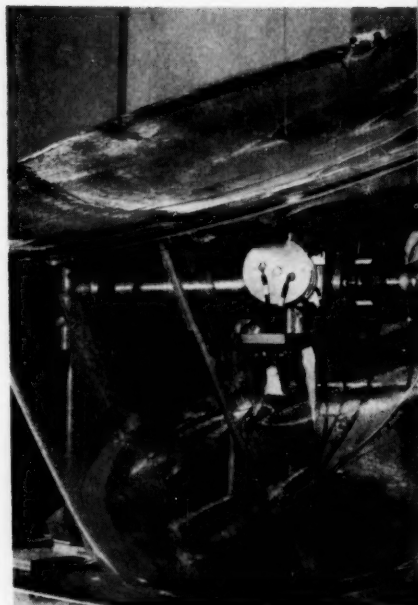
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RESEARCH

approach, removal of radionuclides from the body, has been encouraging in some ways, discouraging in others. EDTA and zirconium citrate are valuable drugs for diverting plutonium in the blood stream away from bone and into the urine. But no known preparation will do this with strontium. And nothing will selectively remove important amounts of either plutonium or strontium once it is deposited in the bone. Nevertheless, scientists at the Los Alamos Scientific Laboratory and at the Montefiore Hospital in New York are working hard on the problem.

In addition to drug research, AEC is interested in studying beta and other radiation burns, the effects of inhaling radioactive materials, and the



Nuclear Probes Are

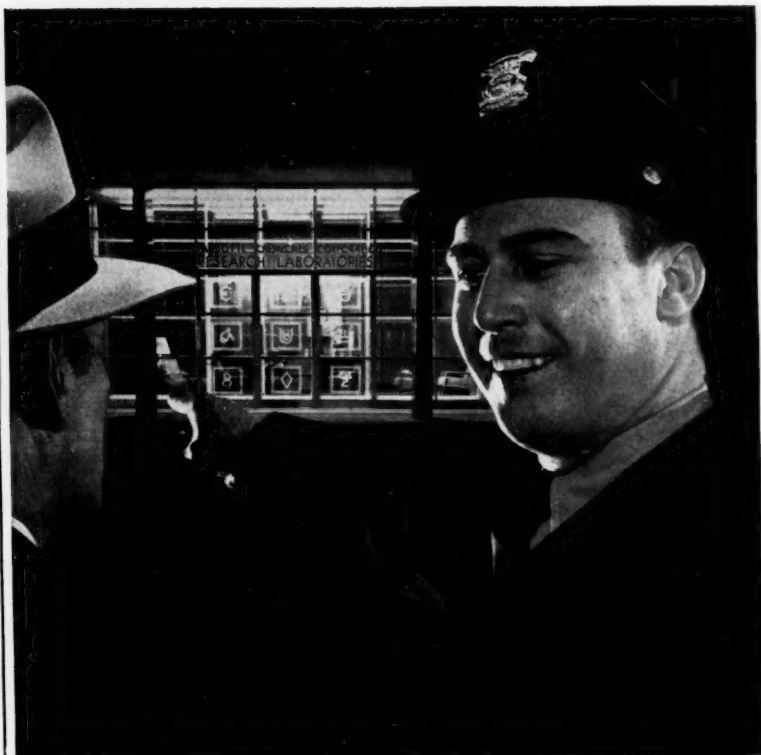
Stanford Research Institute (Menlo Park, Calif.) researchers have developed a low-energy electron accelerator designed to research the electronic structure of atoms, molecules and crystals, determine bonding forces.

To date, most research along these lines has been at the high-energy level, with intent to probe nuclear structure, determine what elements are present in a compound.

genetic and biochemical effects of radiation. Basic knowledge of such matters will, AEC believes, permit a more efficient approach to the problem of combating radiation effects.

Then, there is still the fundamental problem of how much radiation humans can tolerate. AEC has set up standards, revises them from time to time. The present maximum permissible dose, 10 roentgens of "whole body" radiation for the first 30 years of life, has been called three- to five-times too high by Michael Bender of Johns Hopkins University.

When such fundamental problems are solved, there'll be a better chance for discovery of suitable drugs. Meanwhile, there's hardly reason for little more than subdued optimism.



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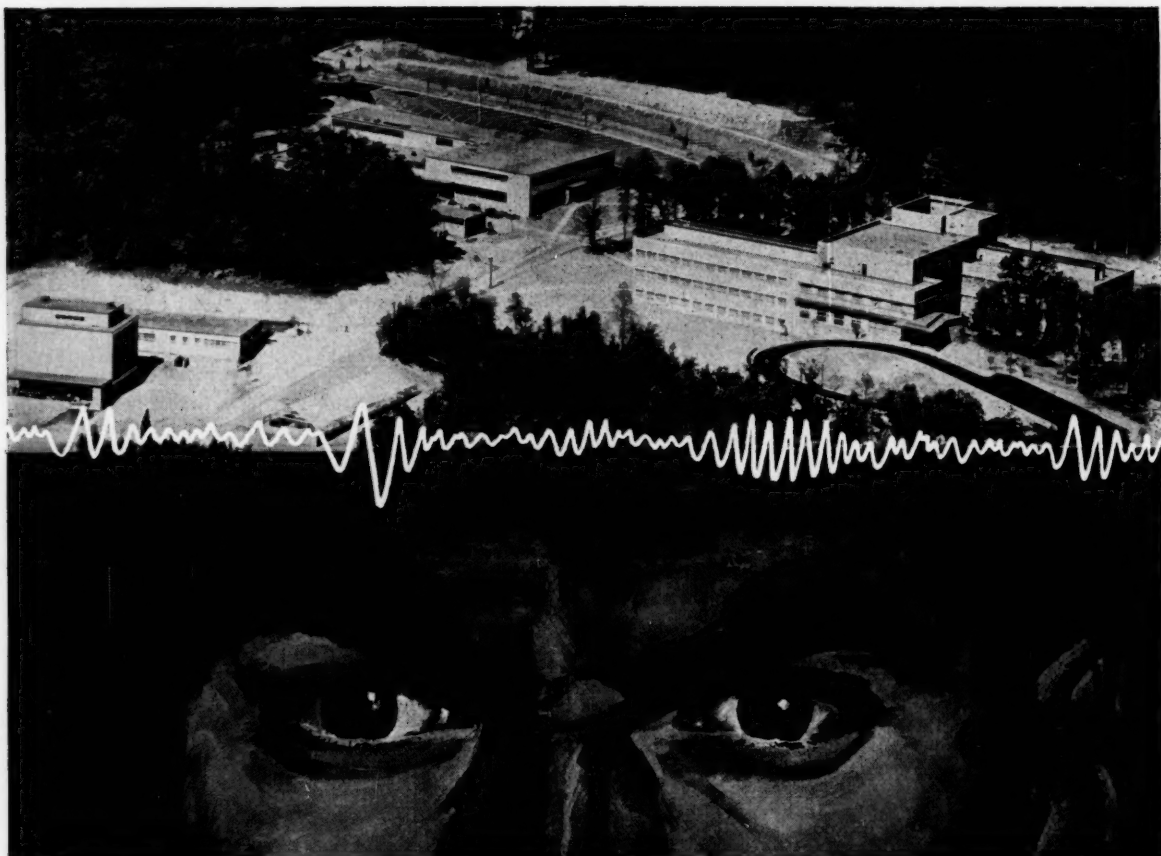
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PACING PROGRESS WITH CREATIVE CHEMISTRY



Shifting into Low

Charles Cook (*above*), manager of SRI's molecular physics section, is optimistic, says, "Our low-energy accelerator will aid in solving problems. Among them: increasing vacuum-tube life. It will lead to better understanding of atmospheric physics, and will also be valuable in long-term research, giving us an insight into crystal structure, photolysis of solids." The accelerator can deliver a defined electron beam of energy up to 600 v.



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Technology

Newsletter

CHEMICAL WEEK
October 19, 1957

Don't be surprised if more oil firms show interest in boron fuels.

Kerr-McGee has announced that it is going to hunt for "saline deposits." The clear implication is that the firm is looking for sodium borate. And there are indications that other companies have been quietly doing the same thing.

So far, Gulf is the only one that has declared itself in, through its cooperative research effort with Mine Safety Appliances. Several oil companies have, of course, worked on boron compounds as fuel additives.

Explorations of the type required to uncover new borate deposits would require considerable sums of money. But the oil companies are accustomed to that sort of operation.

•
A new method of joining nonferrous metals has been developed by Intertectics, Inc. (Bedford, O.). The groundwork for it was laid by Horizons Incorporated (Cleveland). Intertectics, formed in 1953, financed the research in '54 and early '55. The method is reported suitable for joining any nonferrous metals (similar or dissimilar) except those that run high in nickel, silicon or certain rare earths.

In the method, metallic chlorides are placed between the metals to be joined, react with the oxides on the surface of the metal and are themselves reduced. This results in a eutectic. Heat applied to the metals results in a joint that's said to be stronger than the original metals being united. The firm estimates that industry can, in some cases, save at least 50% of its present joining costs.

The zinc chlorides will be marketed in three forms: InterAct-S, chlorides of zinc, lithium, potassium and sodium encased in an alloy of zinc and aluminum; InterAct-E, a similar formula in powder form; and InterAct-G, a mixture of aluminum trichloride, zinc chloride and sodium chloride in powder form.

Brightest immediate prospects for the method, according to Intertectics, are in joining aluminum, titanium and copper for use in aircraft and guided missiles and in electrical appliance industries to eliminate the use of high-resistance welds and complicated casting techniques.

•
Effects of atomic fallout on foods and packaging materials weren't definitively measured in last summer's "Project Plumbob" tests. The Food & Drug Administration, which ran the tests, had planned to expose products during several atomic explosions in June and July. But funds were cut off June 30, and FDA scientists had to settle for only one test exposure. Analysis of the materials is still going on, but results so far indicate that not enough data was gathered, in most cases, to give really useful conclusions. Results will be published—subject to AEC clearance—late next year.

Technology

Newsletter

(Continued)

But the test was of value as far as the 18 packaging materials exposed were concerned. There seemed to be a correlation between the roughness of texture and retention of radioactivity; the smoother the surface, the less radioactivity retained. Also, smooth materials attract more radioactivity when dirty or greasy than when clean. But even heavily soiled cellophane measured less radioactivity than unsoiled burlap.

The Veterans Administration's mental drug evaluation program will be expanded. Some of the patients who received chlorpromazine will take promazine instead (and vice versa), and tests will be run on newer tranquilizers as they become available for clinical use.

Two more reports measuring research and development efforts were released last week by the National Science Foundation. One, on funds for research and development in engineering schools, shows that of \$300 million spent on research and development at colleges and universities, approximately \$75 million was spent by engineering schools. The other report, on scientific manpower in the federal government, shows that of some 2 million on the federal payroll, 7% were engaged in research and development. In addition, about 2% of the military personnel were working on scientific projects.

Research on a furnace to carry out high-temperature chlorinations will be done by Diamond Alkali. It has completed an arrangement with Salem-Brosius (Pittsburgh) on a "new experimental furnace for continuous tonnage chlorination of refractory ores." The furnace is described as a high-temperature, electrical-resistance, horizontal tubular unit. Original design was worked up by Metal Chlorides, now a Salem-Brosius subsidiary.

Original reports on the furnace (*CW*, July 2, '55, p. 71) reported it capable of continuous operation at 4000 F or higher.

A satisfactory, insulative, flame-retardant coating usable on aircraft surfaces has yet to be found. That's what the Air Force says in a report just released. The right coating, of course, must pass some rigorous tests. It should have sufficient insulation against flame temperatures of 2000 F to hold the temperature of the base metal to 350 F. And it must be light, easily applied, adhesive to aluminum and clad aluminum alloys, flexible at normal and low temperatures, resistant to immersion in water, aromatic fuels and lube oils.

The best intumescent system found was a commercial coating topped with a vinyl resin. Boric acid, borax and other low-temperature glass-forming materials showed promise, especially for the top coat. And certain thermosetting resins looked good as binders and vehicles for the foaming reaction.

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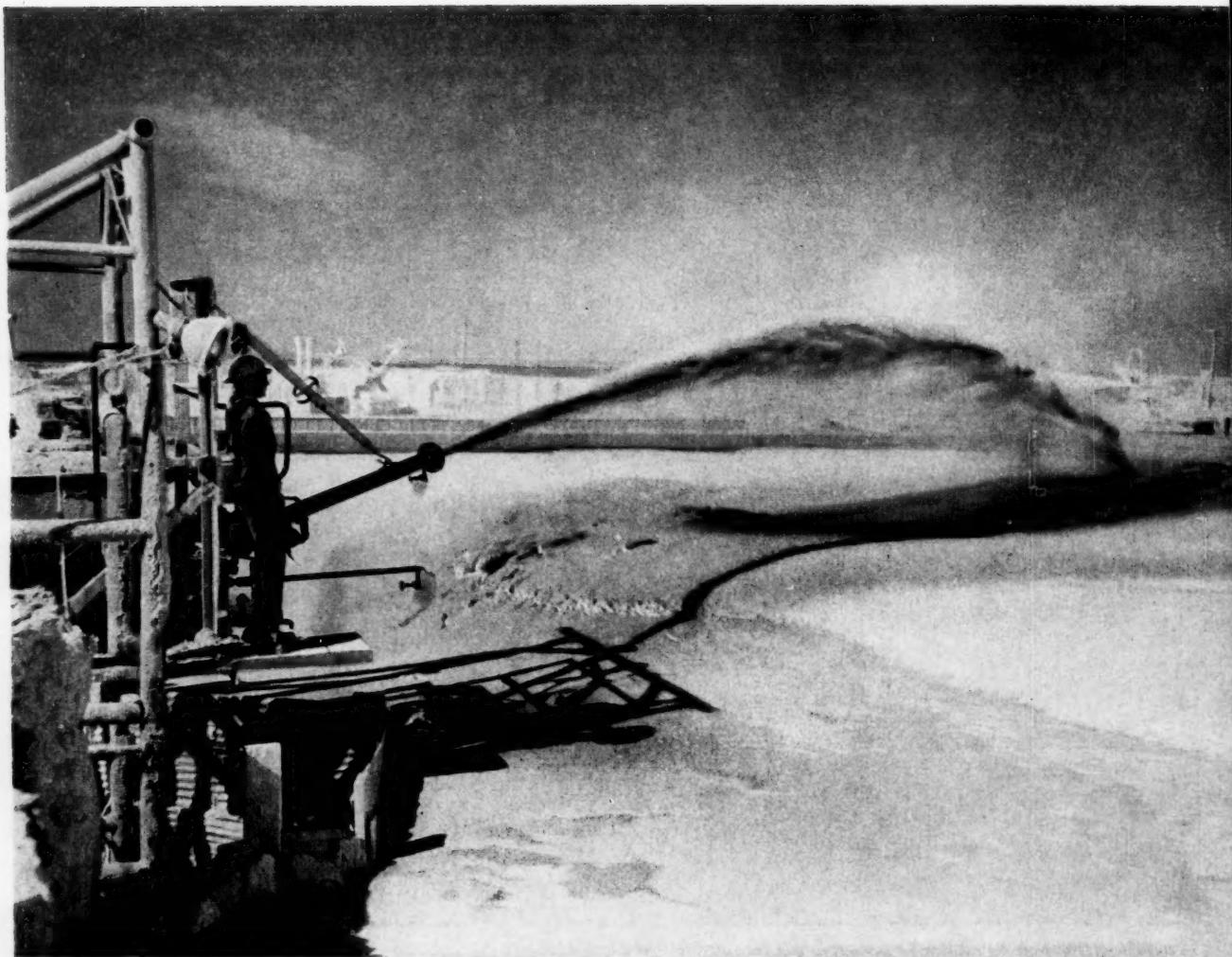
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Sulfur Price Cut: First Step Toward R

Is a worldwide sulfur price war in the making? Some U.S. sulfur market observers say no. But the denials are not as emphatic as they were last year—and for good reasons: the recent drastic price cut by U.S. sulfur producers and evidence of increasingly aggressive competition by foreign sulfur producers would now belie any overoptimistic appraisal that “all’s right with the sulfur world.”

All is obviously not right—especially as the situation affects U.S. sulfur producers. Growing competition by Mexican sulfur was, of course, one of several factors that brought about the current U.S.-initiated price-cutting crisis (*CW Market Newsletter*, Sept. 28). But the eruption of U.S.-Mexican tension is not the only problem faced by the beleaguered U.S. sulfur industry.

The competitive impact of Mexican sulfur is but the first incident in what probably will become a worldwide sulfur hassle—an impending struggle that may well reshape world sulfur trade patterns.

This forthcoming “new look” is not one that’s calculated to elate U.S. producers. Reason: they stand to lose considerable business to foreign sulfur sellers, who are vying for bigger shares of heretofore-U.S.-dominated world sulfur markets.

And the toes of U.S. producers will be trampled right here at home. The Mexicans have already breached the U.S. East Coast sulfur market (a vital factor in the current crisis); meanwhile, Canadian sulfur producers are training their sights on U.S. Northwest outlets. Further, the increasing availability of U.S.-recovered sulfur (up from 150,000 tons in 1950 to 500,000 tons last year) points to added loss of Frasch sulfur producers’ potential domestic business.

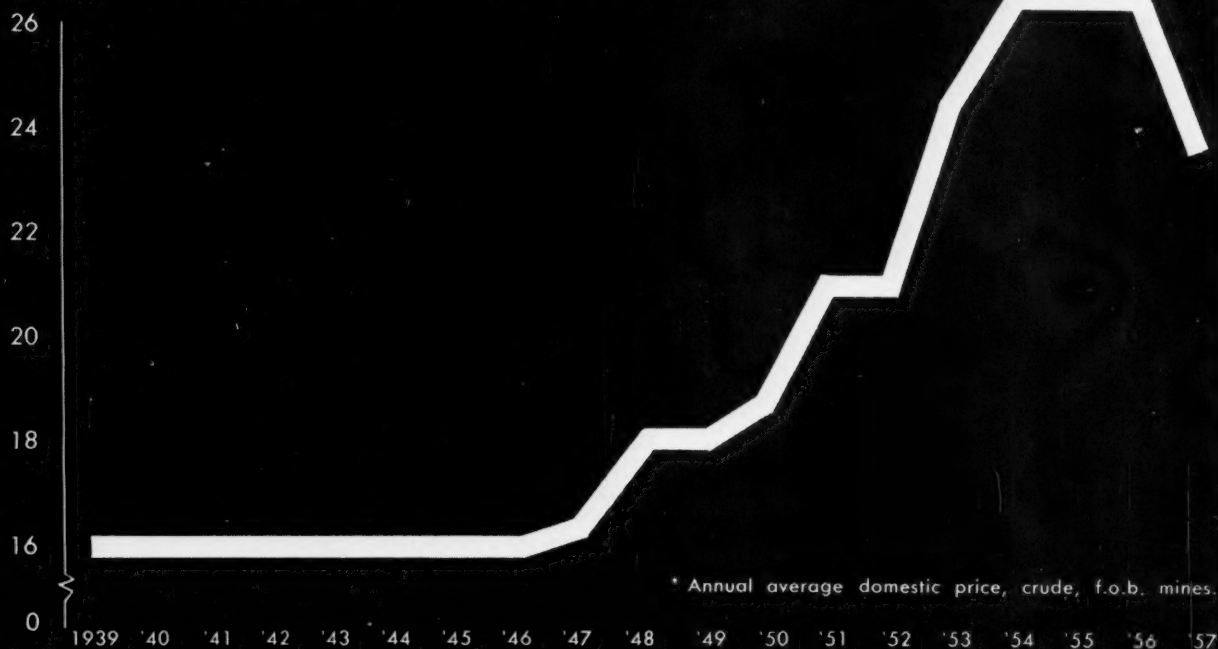
In Europe—where production is expanding significantly—sulfur producers will steadily chip away at nearby U.S.-held outlets.

Some Call It War: It appears now that some U.S. sulfur market observers were whistling in the dark last

MARKETS

U.S. Sulfur Price * Pattern

dollars long ton



Rougher U.S.-Foreign Market Battle?

year when they insisted, "There's no profit in it for anyone if we precipitate a price war. Furthermore, if prices get too low, marginal producers will be forced out of business."

And the price cuts bear out the contention (*CW*, July 7, '56, p. 72) that the bogey would not disappear and that "U.S. sulfur producers may yet be forced to change their ideas when Mexican sulfur output is stepped up and competition tightens."

When U.S. sulfur producers made their surprising move several weeks ago, domestic and export tabs on bright sulfur were cut \$3/ton, to \$23.50/long ton, and on dark material by \$2.50/ton, to \$22.50.

The action wiped out the price differentials previously maintained by Mexican sulfur producers. Since making the maneuver, U.S. producers have been something less than voluble about probable developments, are quietly watching the price cuts' impact on the market.

Nor was there an immediate official reaction from

Mexican sulfur producers—but their silence doesn't imply complacency. One spokesman for the Mexican sulfur industry bluntly tells *CW*, "We won't be driven out of the market." Subsequent action by the Mexican sellers in re-establishing most of the earlier price differentials (*CW Market Newsletter*, Oct. 12) seems to bear out that avowal.

Crisis Buildup: What were the factors that at long last have induced U.S. sulfur producers to buck the Mexican competition?

Just last month, Jacques E. Lennon, of Continental Ore Corp. (New York), speaking before the Canadian Institute of Mining and Metallurgy, detailed the developments that have brought the sulfur industry to this new "period of crisis."

During the 1950-56 period, Lennon observed, "the U.S. Frasch sulfur producers proceeded as though there was no other sulfur production in the field." In this six-year span, elemental sulfur produced by non-Com-

NEW U.S. ELEMENTAL SULFUR PROJECTS

(COMPLETED IN '57, UNDER CONSTRUCTION, OR ANNOUNCED)

Company	Location	Capacity (TPD)	Status
Frasch			
Texas Gulf Sulphur	Fannett, Tex.	—	Due in 1958
Freeport Sulphur	Lake Peltó, La.	—	Date not announced
Freeport Sulphur	Grand Isle, La.	—	Due in 1960
Recovered (refinery gas)			
Tidewater Oil	Delaware City, Del.	340	Completed Feb. '57
Pontiac Eastern	Hattiesburg, Miss.	25	Due end of '57
American Oil	Yorktown, Va.	50	" " " "
Anlin Co. of New Jersey	Perth Amboy, N. J.	60	" " " "
Allied Chemical & Dye, General Chemical Division	Bayway, N. J.	60	" " " "
Magnolia Petroleum	Beaumont, Tex.	70	Due in 1958
Commerce Oil Refining	Jamestown, R. I.	—	Announced
Gulf Oil (expansion)	Port Arthur, Tex.	60	Completed in '57
Wilshire Oil ("")	Norwalk, Calif.	15	" " " "
Hancock Chemical ("")	Wilmington, Calif.	—	Due end of '57
Consolidated Chemical Industries, ("") division of Stauffer Chemical	Baytown, Tex.	100	Due in 1958

munist nations increased 41% while consumption increased only 19%. By the end of '56, there was an oversupply of about 1 million tons of elemental sulfur in Western-nation markets.

Combined shipments of U.S. sulfur (both Frasch and recovered) decreased about 12% during the first five months of '57 (compared with '56). "And, for the first time," notes Lennon, "the U.S. Frasch sulfur producers took cognizance of reality by reducing their production approximately 8% (compared with the same period in '56). Despite the cutback, stocks held by U.S. producers continued to pile up; and over the last 18 months, such piles increased approximately 30%."

The decreased sales of domestic-produced sulfur in the U.S. during the first five months of '57 is attributed partly to increased shipments to this country by Mexico and partly to decreased demand by U.S. consumers. (Exports by U.S. producers were about the same as in '56.)

In the light of these trends, the U.S. sulfur industry now apparently feels that it must make an effort to recapture the slipping domestic market—hence the price cuts. Although some market observers express doubts that this move will solve the problem,

no critic has suggested a better solution.

Trouble from the North? When Alberta, Can., sulfur producers began boosting output in '55 (*CW*, Oct. 8, '55, p. 81), U.S. producers expected little competition from them.

But in two years, the outlook has changed significantly. Sulfur marketers are now "conservatively" forecasting Alberta's sulfur output, by '62, at 2 million tons/year—enough to earmark Alberta as an important sulfur-producing center of the future.

Right now, Canada imports about 400,000 tons/year of sulfur, mostly from the U.S. Some 75% of it is consumed in eastern Canada, and it's likely that U.S. producers will be able to keep this market for some time. Because of considerably higher freight rates, Alberta sulfur can't compete with U.S. imports in the Eastern provinces. (But U.S. imports to eastern Canada will soon be competing against sulfur-recovery plants now under construction at Montreal East, Que., and Cutler, Ont.)

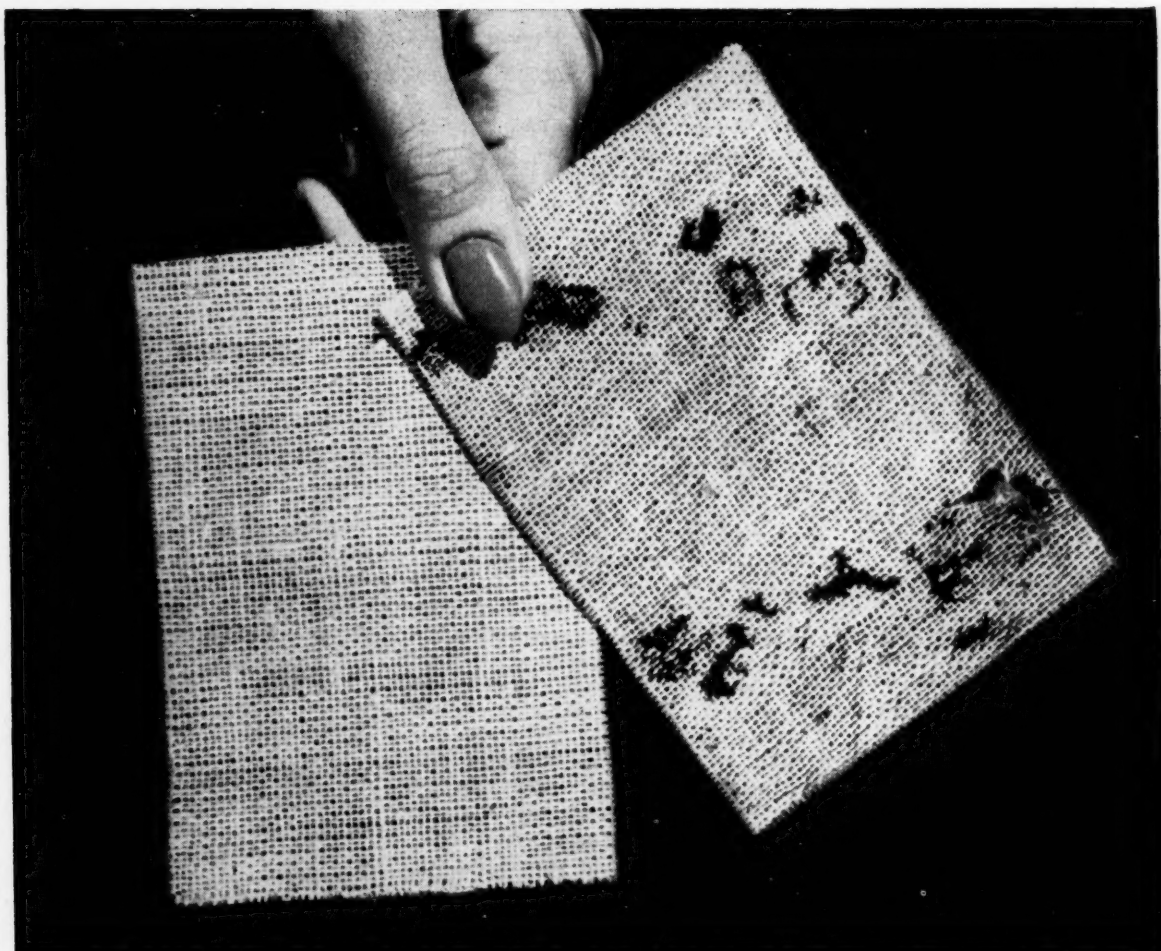
In northwest U.S. (and Canada), the Canadians have a geographical advantage, are expected to eventually control the region's sulfur markets, now estimated at 350,000 tons/year

and which may climb to some 500,000 tons/year by '62.

But Canada's potential competition with the U.S. sulfur industry isn't limited to this continent. Alberta's sulfur producers are already eyeing overseas markets that have been major export outlets for U.S. sulfur. The likely targets: Australia, New Zealand, India, Philippines, Pakistan, Burma, Indonesia and South Korea.

Australia and New Zealand, two of the top five foreign customers for U.S. sulfur, together import an average of 290,000 tons/year from the U.S. Their sulfur needs are growing steadily. Australia's sulfur requirements, for example, are expected to increase 30,000 tons in '57, solely because of expanding uranium production. Five years hence, Australia and New Zealand are expected to consume at least 450,000 tons/year.

Expanding sulfur requirements by Asiatic nations will, by '62, help create an estimated demand for some 1.6 million tons/year—and that amount could conveniently be supplied by Canadian producers. (The expected '62 demands are: western U.S. and Canada, 500,000 tons/year; Australia and New Zealand, 450,000 tons; India, 400,000 tons; Korea, 200,-



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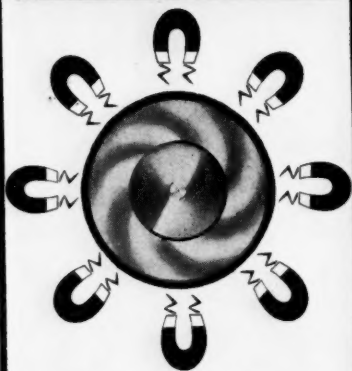
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MARKETS

000 tons; Parkistan, Indonesia, Philippines, etc., 50,000 tons.)

Co-op Marketing? Obviously, U.S. sulfur producers won't let Canada walk off with these lush markets without a struggle—but it's too early to predict which nation will eventually gain most.

Canadian sulfur producers face one serious—but not necessarily insurmountable—handicap. The relatively few (but large) U.S. sulfur producers can each maintain big reserve stocks of sulfur (to ensure adequate supplies at all time), but the smaller Canadian producers are unable, individually, to provide such assurance of steady supplies.

One possible solution, now being considered by Canadian producers, is the establishment of a joint marketing organization that would permit pooling of excess sulfur production into one sizable reserve stock. It would also cut the marketing costs borne by each producer. Such savings could conceivably be the key factor that would enable Canadian producers to maintain competitive sulfur prices.

Everywhere You Look: A glance around the world reveals more sulfur areas are beginning to produce. Of special interest is France's sulfur-recovery plant owned by the Societe Nationale des Petroles d'Aquitaine, whose estimated sulfur output from sour gas will exceed 1 million tons a year by '62.

In a few years, France will be able to supply its own sulfur needs and, to a considerable extent, the needs of England and other nearby nations. Since both France and the United Kingdom are presently two of the top five customers for U.S. sulfur, the rise of the French sulfur industry spells more trouble for U.S. sulfur producers.

Also on the European scene is Italy, whose sulfur industry last year produced 200,000 tons of elemental sulfur, 60% of which was exported. And there's talk that Poland has a potential source of 100 million tons of native ore sulfur.

Unless U.S. sulfur producers have an ace up their sleeve, it seems clear that they may soon be in the unenviable position of having to give up many sulfur markets to foreign producers with geographical advantages.

This obviously points to the likelihood of continued cutbacks in the

output of U.S. Frasch sulfur. Lennor predicts that annual production of major sulfur-producing nations will shape up this way in '62: U.S., 6 million tons; Mexico, 1.5 million; Canada (Alberta), 2 million; France, 1 million; Italy, 400,000; total, 11 million. Total consumption of sulfur, he adds, will probably fall considerably short of 11 million tons.

What's the Answer? What will U.S. Frasch sulfur producers do? They aren't saying. What can they do? They could stir up an all-out price war in an effort to knock out, or at least minimize, the potential competition. This, say some independent observers, is the purpose of the recent price cut. But, they add, it's a tactic that is doomed to failure. Sulfur producers won't argue the point because they deny any intent of creating a price war.

A less hazardous way out, some think, would be for the U.S. Frasch sulfur industry to use its huge accumulated capital reserves to diversify. But if the industry has such plans, no hints are forthcoming.

The setting up of a 25% tariff on all U.S. sulfur imports is the aim of Rep. F. Edward Hébert (D., La.) (*CW Market Newsletter*, Aug. 10). But introduction of the measure by Hébert brought sharp criticism (and hints that it was politically inspired) from certain U.S. corporations with sulfur interests in Mexico.

That U.S. Frasch sulfur producers chose to attack the foreign competition with a price cut, rather than by pushing through a protective tariff, suggests that even some of those whom the bill is supposed to benefit are not entirely sold on its value. U.S. sulfur producers may well ponder what would happen if the Canadians, for example, decided to slow down sulfur imports from the U.S. with a retaliatory tariff of their own.

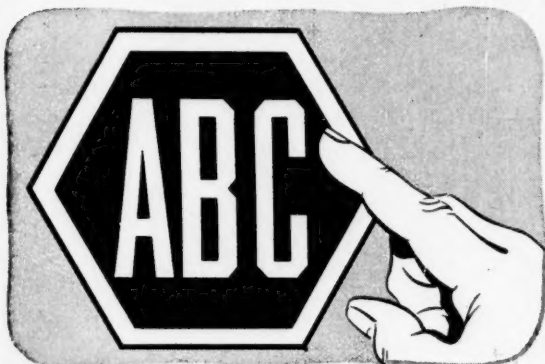
More a balm than a solution is the suggestion of one observer that the U.S. Frasch sulfur industry should look on an impending production cutback as a blessing in disguise because it would extend the life of their sulfur domes and assure longer-lasting supplies for the nation's consumers.

But sulfur producers aren't in the business to preserve domes; what may be a happy thought for conservationists and sulfur consumers may only look like a hard-to-phrase paragraph in producers' annual reports.

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The Audit Bureau of Circulations (ABC) is a cooperative organization that sets standards of good business conduct for its publisher members. Twice each year ABC auditors carefully scrutinize the entire circulation structure and operation of every member magazine. In a very real sense, therefore, they are "minding the store" — making sure that no false or misleading claims are made regarding the size or composition of a magazine's audience.



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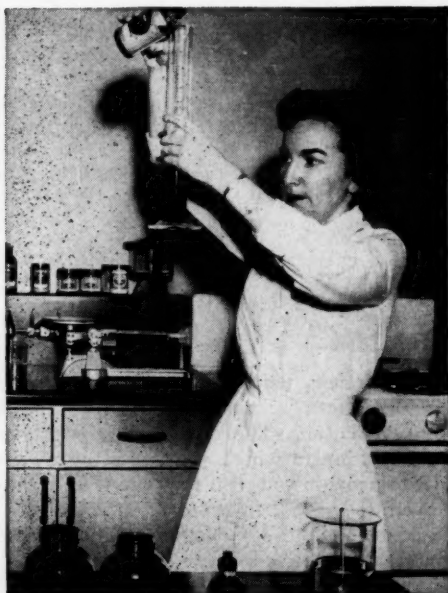
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CHEMICAL MATERIALS FOR INDUSTRY



G57-C

Market Newsletter

CHEMICAL WEEK
October 19, 1957

The chemical price index may be going higher. Some items that were unchanged at the Oct. 1 fourth-quarter pivot point will be boosted on Nov. 1: phenolic resins, for instance. Late last week, Monsanto—following General Electric's move—posted a 1¢/lb. increase in the price of its general-purpose phenolic molding compound. New tag: 21½¢/lb.

Electrical, impact, and other special formulations will also be increased 1¢/lb., and the price differential between bag and drum shipments widens by ¼¢/lb.

Behind the hike is a familiar plaint: "increased manufacturing costs," in this case, particularly the higher cost of raw materials, phenol and formaldehyde, says Monsanto.

Russia's Sputnik is being credited with sparking a revived interest in the mercury market. But, despite stepped-up inquiries from the defense-related electronics industry, as well as other sales, the price of mercury was still slipping at the end of the week.

The latest \$2/flask cut brought mercury prices down to about the government's paying price of \$225/flask, at the mines; and to \$232, delivery in the East. The steady drop over the past several weeks is attributed to a jump in domestic production and easing demands.

The U.S., incidentally, will continue buying mercury, at least for another year. The General Services Administration purchasing program was originally announced as a three-year deal (*CW*, July 31, '54, p. 67), was slated to end Dec. 31 of this year.

Prices may fluctuate, but expansion shows no sign of abating. This week, via new and enlarged producing facilities, there will be more ethylene, butadiene, rubber copolymers and methanol for U.S. markets. And in Canada, more petrochemicals.

At Sweeny, Tex., production is under way at Phillips Chemical's new 180-million-lbs./year ethylene plant. The installation is adjacent to the company's refinery and natural gas processing center. The new ethylene output is being used to make Phillips' new Marlex rigid polyethylene at the firm's Adams Terminal chemical facilities on the Houston Ship Channel. Celanese buys ethylene from Phillips for its ship channel plastic plant.

And under way this week is a four-day dedication ceremony at Odessa, Tex., inaugurating two petrochemical plants. The General Tire & Rubber-El Paso Natural Gas venture, touted as the first postwar privately financed, completely integrated rubber-making outfit, includes an estimated 30-35,000-tons/year, \$22-million butadiene unit, and a \$10-million copolymer installation capable of turning out some 50,000 tons/year of rubber.

Market Newsletter

(Continued)

Union Carbide Canada's \$25-million petrochemical plant is already operating at Montreal East (*see p. 34*), but construction crews are still busy. The company is spending an additional \$4 million to increase capacity of the plant's polyethylene resin unit. Expansion of the latter will be completed early next year, will boost polyethylene resins output at the plant to some 30 million lbs./year.

Late last week, Heyden Newport Chemical opened a \$3-million plant (at Telogia, Fla.) for the production of rosin turpentine, pine oil, and dipentene. It's the firm's fifth such Naval-stores installation, will be able to process "thousands of tons of stump wood per month," turn out an estimated 30 million lbs./year of the tree-chemicals.

Products to be made at the new unit, says E. J. Sisson, vice-president in charge of the operation, are "important raw materials" for the company's expanding line of rosin specialties and terpene chemicals.

Producers of refrigerants and propellents are apparently girding for tougher market battles. Du Pont, for example, will institute a "one price" policy on all its Freon refrigerants, aerosol propellents, and solvents (effective Dec. 26) "to help customers reduce distribution costs."

The revised pricing and distribution system, says Joseph Hoopes, manager of Du Pont's Freon products field distribution, "contains all the elements necessary to produce the aggressive selling efforts needed to meet increased competition of the future." The Wilmington firm is also naming Ansul Chemical (Marinette, Wis.) and Virginia Smelting (Norfolk, Va.) as exclusive wholesale sales agents for Freon refrigerants.

Earlier, Pennsalt Chemicals named American Potash & Chemical as national distributor for its Isotron refrigerant line; the agreement will go into effect the first of the year. American Potash will continue to manufacture and distribute sulfur dioxide and methyl chloride "to provide a complete line of chemicals for all types of refrigeration units."

SELECTED PRICE CHANGES—WEEK ENDING OCTOBER 14, 1957

	Change	New Price
UP		
Casein, Argen., bgs., c.l., duty paid	\$0.01	\$0.23
Crude cottonseed oil, tks., South, East	0.00125	0.125
Refined cottonseed oil, Salada, tks.	0.00125	0.16
Lead peroxide, tech., pdr., bbls.	0.0625	0.45
DOWN		
Mercury metal, 76-lb. flask	5.00	\$232.00
Tin metal (Straits)	0.00375	0.9225

All prices per pound unless quantity is stated.

THESE RESINS GIVE YOU NEW ANSWERS

TO PRODUCT AND PROCESSING PROBLEMS



New improved Exon 900 series with tailored blending qualities
means faster, more versatile production

... typical of the pin-pointed properties in Exon Vinyl Resins

Here is another addition to Firestone Exon's growing list of pin-pointed answers to specific problems: the new improved Exon 900 series.

These three new polyvinyl chloride resins offer many profitable advantages. The most important is greater versatility in both production and in the products you can make. For now Firestone gives you tailored blending to answer product and processing problems.

Firestone engineers have improved both the *absorptive* and *adsorptive* qualities of these new PVC resins. As a result, you get a greater pre-mix blending range, whether running hot or neutral. You can blend greater amounts of monomeric or polymeric plasticizer in

the formulation. You get a wider area of temperature control.

To these temperature-tailored resins add the advantages of faster solvation, faster fusion rates in Banburys and mills, high quality, less fisheyes, greater product uniformity. New Exon 900 series resins give you greater dollar economies through quicker production.

Exon 911, 921 and 931 are just three of the resins in industry's most complete line of versatile vinyls. Another reason industry looks to Firestone Exon for engineered answers to its needs.

Consider your own production or product problem. Then for the resin properties pin-pointed to the best solution for you, check with Firestone.



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Harshaw Sodium Methylate

SPEC 101

(Sodium Methoxide)

**Packaged in airtight steel drums
of 10, 25, 50 and 200 lbs. net**

Free Flowing white
hygroscopic powder

Sensitive to air and moisture

Packs about 4 pounds
per gallon

Formula NaOCH_3

Formula Weight 54.03



TYPICAL CHEMICAL ANALYSIS

Sodium Methylate Typical.	97.5%	Methanol Free	0.5
Sodium Hydroxide.	0.5	Soluble in Methyl Alcohol	
Sodium Carbonate.	0.4	Decomposed violently	
Sodium Formate.03	by water	

PHYSICAL PROPERTIES

Fine White Powder—over 75% through 150 mesh—less than 1% on 10 mesh
Melting Point—none
Decomposes in air above 260° F.

STABILITY

Harshaw sodium methylate, both in powder and solution form, is stable in the sealed containers. Exposure to air will cause progressive decomposition—rapidly for the powder, more slowly for the solution.

also available Sodium Methylate Liquid

SPEC 102

Packaged in Steel Drums 100 pounds or
425 pounds net

25% solution of sodium methylate
in methanol

Analysis:

Bulking Density 7 lbs. per gallon
Initial Boiling Point. 188° for 25%
Flash Point (Cleveland Open Cup) 85-90°F
Flash Point (Closed Cup). 80°F
Crystallization Temperature
30°F after equilibrium



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SPECIALTIES



Cutting Fluids Poise for New Sales Splash

Users of cutting fluids—fluids designed for cooling and lubricating tools and metal in metalworking—will soon have some new products to choose from. Atlantic Refining Co. will launch six (possibly seven) improved products by the end of the year, and Sun Oil Co. predicts a great future for its new improved SECO (Sun emulsifying cutting oil).

Atlantic isn't yet saying what its improved additive is, except that it's a synthetic material that will go into six straight cutting oils and one emulsifying oil. Greatest improvement in SECO, says Sun, is its emulsifying stability under hard-water conditions (300 ppm.). These upgraded oils will join the raft of products in today's highly competitive market for cutting

Borax

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	GRANULAR	POWDERED	CRYSTAL	IMPALPABLE
TECHNICAL	●	●	●	●
U.S.P.	●	●		●
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SPECIALTIES

Cutting Fluid

Composition

Straight Oil

Active

- (a) 1% sulfur dissolved at 180-250 F in mineral oil (light colored)
 - (b) 2-3% sulfur dissolved at 400-500 F in mineral oil (dark colored)
 - (c) 2-3% sulfur, 1% chlorine, mineral oil
- Each type contains extreme pressure agent (chlorinated paraffin wax, sulfurized terpenes)

Inactive

- 5-25% fatty oil (lard, tallow, sperm, rapeseed, coconut)
- 1% fatty acid
- Mineral oil
- Sulfur in unreactive form

Soluble Oil

- 90% mineral oil
- Coupling agent (glycol, alcohol—100-200 molecular weight)
- Emulsifying agent (sodium petroleum sulfonate, fatty acid soap, potassium rosin soap, phenates, naphthenic acid soap, synthetic emulsifier)
- Germicides, wetting agents, antifoam agents, water softeners

Water Solution

- 1-2% alkali (borax, sodium carbonate, trisodium phosphate)
- Antirust agent (sodium nitrite, triethanolamine)
- Water
- Wetting agent, buffer, solubilizing agents, load-carrying agents

Straight oils are classified as inactive or active, depending on their reactivity—due to sulfur and chlorine content—toward metal. Makers of cutting fluids use about 1,000 tons of chlorine, 1,000 tons of sulfur and 2,000 tons of fatty oils each year. A specific fluid does not necessarily contain all the ingredients listed in this table.

Fluid consumption is estimated by some (Atlantic, S. C. Johnson & Sons) at 56.6 million gal.—a plateau that was reached in 1953. Others say that '53 was a boom year, due to the Korean War, estimate '57 consumption at around 39 million gal. Still other cutting-fluid manufacturers (Sinclair, Sun) are more optimistic—place '57 volume between 80-100 million gal.

Despite these differing market estimates, cutting fluids are big business. At the least, sales volume is between \$30-40 million.

Types and Uses: Three types (see table, p.92)—straight oil, water soluble and water solution—make up the cut-

ting fluid field.* Accounting for about 60% of sales are straight cutting oils, of which two-thirds are premium quality, heavy-duty, compounded oils and one-third are economy grade. About 35% of the total market goes for water-soluble (emulsifying) cutting oils. Water-solution cutting fluids make up the remaining 5%.

In the metalworking industry—the sole market—cutting fluids are used as lubricants, coolants and antiweld agents. As lubricants, they are used in the area between the cutting tool and the chip (pressure reaches 200,-

*Gases such as carbon dioxide are occasionally used as coolants, but in no great volume. Molybdenum disulfide is also used occasionally for specialized applications.

"How'd those last five loads
of J&L drums come in, Joe?"

"Checked 'em all with the drop
light, Boss. Clean as a whistle...
never saw a better lining job."



- J&L specialists, backed up by modern research, are ready to consult on your toughest packaging problems.
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- J&L steel containers provide engineered packaging for dependable transportation and safe storage.
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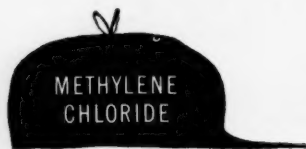
Call your nearest J&L Container Division office for recommendations on your packaging problems. Or write direct to the Container Division, 405 Lexington Avenue, New York 17, N. Y.



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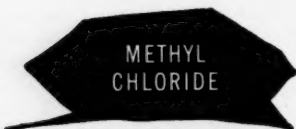
**Hats off (you'll say)
to Diamond
Chlorinated Solvents**



(Dichloromethane)
Practically
nonflammable



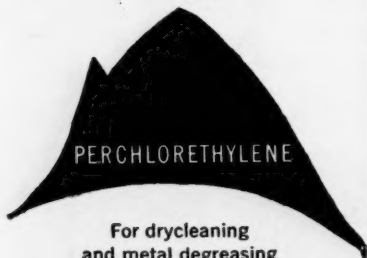
Technical grade
or U.S.P. grade



(Monochloromethane)
Resists oxidation
Thermal stability



Also fire extinguisher
fluids, grain fumigants
and custom blends



For drycleaning
and metal degreasing

Phone your DIAMOND Representative
or write DIAMOND ALKALI COMPANY,
300 Union Commerce Building,
Cleveland 14, Ohio



SPECIALTIES

000 psi.) to reduce friction, thus prolong tool life and save power. As coolants, they reduce heat (about 1000 F) generated in working metal. When the tool becomes too hot, its hardness and resistance to abrasion are reduced. Also, when the working metal gets too hot, its shape is distorted. The antiweld properties of cutting fluids prevent the welding of chips to the cutting tool.

Biggest development of recent years is the advent of dual-purpose oils for both lubricating and cooling purposes. Today's ceramic and carbide tooling, permitting higher machining speeds, has boosted sales of water-soluble oils, which combine both cooling and lubrication functions. Makers predict that sales of these emulsifying cutting oils will continue to gain.

Different machining operations require different cutting fluids. When a high-grade finish at low speeds is desirable, lubrication is more important. In high-speed operations, due to the amount of heat generated, cooling is the important factor. The cooling effect in a cutting fluid comes from the water, because of its high specific heat.

The type of metal being worked also determines which fluid is used. Copper is stained by sulfur, a common constituent of straight cutting oils; and magnesium involves fire and electrolytic corrosion hazards when water-base fluids are used.

Top States: About 70% of the cutting fluid market is concentrated in six states. Michigan leads in sales volume. Next are Ohio, Illinois, New York, Pennsylvania and California, in that order.

The metalworking industry operates 3.4 million production machines requiring lubrication and coolants. Of this gigantic industry (selling more than \$120 billion worth of products in '57), autos and auto parts use the greatest percentage of cutting fluids. (Cadillac Motor Car Division of General Motors uses 103,785 gal./year of cutting, lapping and machining oils.) Fabricated metal products, aircraft, and the electrical-equipment industries also stack up as big-volume users.

How Much They Use: Here's how much cutting oil, Chicago Screw Co. (Bellwood, Ill.)—one of the largest screw-machine-products plants in the world—buys in a year to process over 50 million lbs. of steel, 2.5 million lbs.

of brass, lesser amounts of other metals. The company estimates that in '57 it will, in turning out parts such as fasteners, tappets, pushrods, use a total of 200,000 gal. of oil. Of this, some 50,000 gal. will go for lubricating and hydraulic purposes, leaving about 150,000 gal. for "cutting" purposes of all kinds to be used on the company's 1,700 metalworking machines. Of the 150,000 gal. approximately 13,000 gal. are water-base oils; the remaining 137,000 gal. are oil-base fluids. (The firm estimates usage of cutting fluids as about 150 gal./machine/year.)

The company doesn't recover the water-base oils or oil used on grit-using grinding machines but does have an extensive program for recovering the oil-base fluids. In recovering some 3,000 gal. of oil each week, the company takes chips from machine to crushers, drains oil off the crushed chips into collection tanks. The chips are then blown into hoppers and fed into centrifugal extractors, which dry the chips. Oil collected from extractors also goes into collecting tanks and is then pumped into settling tanks, where heat (over 180 F) is applied to help settle sediments and fine chips and to sterilize the oil. After this settling process (normally 24 hours), the oil goes to another centrifugal separator, which removes any water or fine sediment, then to storage tanks, where it is ready for use as reclaimed oil. The company says it's just as good as new oil, except that some ingredients (like sulfur and paraffin) must occasionally be added.

Buyers and Sellers: Production personnel (production management, department heads, plant engineers) obviously have the greatest influence in the buying of cutting fluids. Most sales are made through the makers' own salesmen. There are few jobbers in the field.

Oil companies are by far the top makers of cutting fluids. Shell Oil, Socony Mobil, Sinclair Refining, Texas Oil, Esso Standard Oil, Sun Oil, Cities Service, Gulf, and Standard of Indiana are big in sales volume. Also fighting for the market are D. A. Stuart Oil (Chicago), Oakite Products (New York), E. F. Houghton (Philadelphia), National Refining (Cleveland), Quaker Chemical Products (Conshohocken, Pa.), and Doall (Des Plaines, Ill.). S. C. Johnson & Sons

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- *Benzene*
- *Toluene*
- *Xylene*

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Using a combination UOP Platformer—Udex process with an annual production of 45,000,000 gallons, the new Delhi-Taylor plant is equipped with the most up-to-date process control systems, insuring product quality and uniformity to meet the most stringent specifications.

Our plant has its own docking facilities and is conveniently located for bulk shipments by barge, tank car or truck.

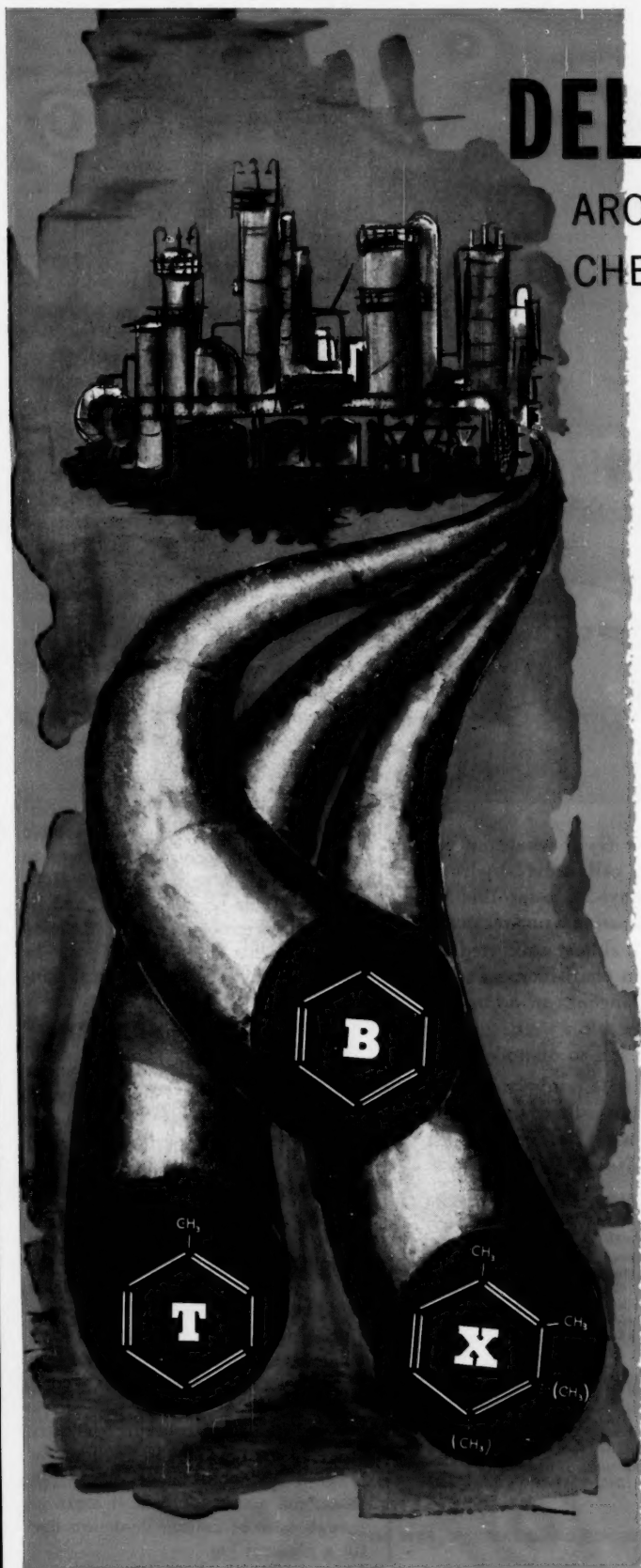
For detailed information on product specifications, prices and delivery schedules, write to Chemical Division, Delhi-Taylor Oil Corp., 415 Madison Ave., New York 20, N. Y.



CHEMICAL DIVISION

DELHI-TAYLOR OIL CORP.

415 Madison Ave.
New York 20, N. Y.





SPECIALTIES

(Racine, Wis.) gets a substantial slice of the market, too. One milling company, Cincinnati Milling Products, division of Cincinnati Milling Machine Co., makes its own cutting oils—is well known for its cherry pop-colored Cimcool. A small amount of chemical solution type is marketed in powdered form.

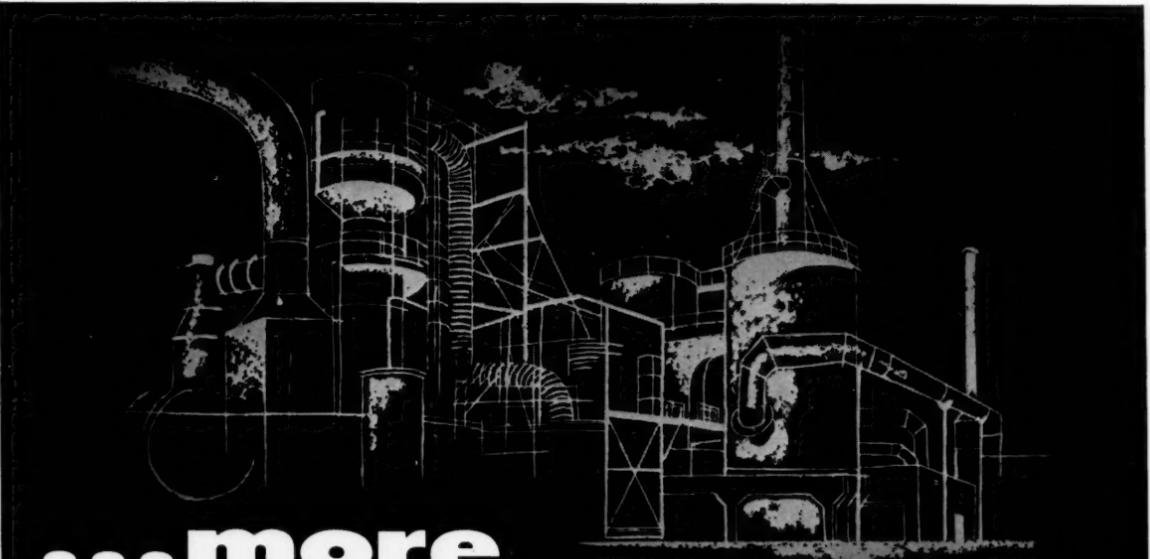
Cutting fluids are usually sold to the nation's 25,000 metalworking plants in 50-gal. drums, although they are also supplied in tank cars. Water-soluble oils are usually sold as concentrates; the user makes the desired dilution—it may range from one part oil to 10 to 100 parts water. Average price is around 50¢/gal. in average quantity purchases. Cost per gallon ranges from 40¢ to \$3. Straight oils purchased in tank-car quantities sell for around 20-23¢/gal.

Among the biggest problems encountered by producers is the cost of distribution, which is affected mainly by high freight and warehouse charges.

Recovery Methods: Helping reduce the sales volume of cutting fluids are elaborate recovery systems used by metalworking plants. Chrysler Motors, for instance, uses eight under-floor flumes, to recover water-soluble coolants. Used coolant discharges to these flumes, is passed through Hoffman flotation-type clarifiers and is ready for reuse. National Refining estimates that "about 50% can be recovered by centrifugal chip spinners." Some companies report using a straight oil for as long as two to three years before adding a fresh charge. Soluble oils have a shorter lifetime—maximum of about one year.

Industrial Dermatitis: As a hygienic measure, oils are usually pasteurized before reusing, especially water-soluble types. But some water-soluble oils lose their emulsifying properties when heated above 200 F. The water permits bacteria growth, causing the fluid to become rancid and release foul "Monday morning" odors. Dermatitis is also a big problem, but consumer-education, plus formulation improvements have curbed this complaint.

With the metalworking industry spending more than \$4.6 billion in '57 (\$11.4 billion in the period '58-'60) to expand and modernize, it looks as though sales of cutting fluids are due for a pleasant jog.



**...more
quality proved
POWELL VALVES**

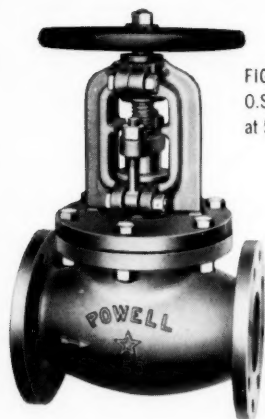


FIG. 2429—Large Size Stainless Steel O.S.&Y. Globe Valve for 150 Pounds W.P. at 500 F. or 230 W.P. at 100 F.

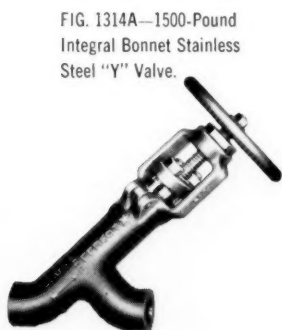


FIG. 1314A—1500-Pound Integral Bonnet Stainless Steel "Y" Valve.

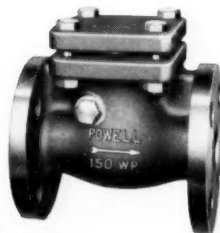


FIG. 2342—Stainless Steel Bolted Cap Swing Check Valve for 150 Pounds W.P.

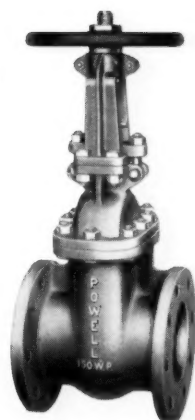


FIG. 2453SG—Stainless Steel O.S.&Y. Gate Valve for 150 Pounds W.P.

Designed for long life, designed for dependable service

Consult your Powell Valve distributor for all the facts about quality proved bronze, iron, steel and corrosion-resistant valves. For every flow problem . . . there is a Powell Valve to solve it.

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Poor color in this sample of sodium toluene sulfonate resulted from use of competitive nitration-grade toluene.



The clear solution of sodium toluene sulfonate shown above was prepared from high-purity Sunoco Toluene.

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Hydrocarbon Chemicals Inc., Newark, New Jersey know that quality of raw materials is the determining factor in the quality of the end product.

In keeping with their reputation for high standards, they tested many competitive grades of toluene. They found Sunoco® Toluene was the highest quality material available and that it consistently gave them higher yields and purer solutions of sodium toluene sulfonate.

The reason: *Every shipment* of Sunoco Toluene surpasses the most rigid standards set up by the industry. Make your own comparison test from the specification chart listed here. If you use toluene in your processing, it will pay you to try Sunoco Toluene. You can see for yourself why it helps solve so many problems of color and purity in end products.

For complete information, see your Sun representative... or write for Technical Bulletin 27 Address SUN OIL COMPANY, Phila. 3, Pa., Dept. I-6

MAKE YOUR OWN COMPARISON TEST

	TYPICAL ANALYSIS	
	SUNOCO TOLUENE	YOUR PRESENT TOLUENE
Olefin Content		
Acid Wash	1	
Bromine Index . . .	Negligible	
Paraffin Content . . .	0.0	
Residue after Evaporation	Not Detectable	
Thiophene Content . . .	None	
Sulfur Content	0.001% by wt.	

OTHER SUNOCO PETROCHEMICALS: Benzene, Xylene, Naphthenic (Sunaptic) Acids, Propylene Polymers, Anhydrous Ammonia, Sulfur Petroleum Sulfonate, and Liquid Petroleum Polymer (PDO-40)



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Southside Chicago and parts of downtown area were scenes of Chas. Pfizer's 'Operation Smokestack'.

The Day 35 Salesmen Invaded Chicago

Organized "smokestack chasing" made a dramatic reappearance on the chemical marketing front a few days ago in Chicago as Chas. Pfizer & Co. revived a technique that had its heyday in the great depression.

The entire bulk chemical division's sales staff, 35 strong, invaded selected Chicago industrial areas to canvass, on a systematic and thorough basis, companies never previously solicited, many without an apparent use for Pfizer chemicals.

This week, back in Brooklyn, company executives toted up the results. They constitute an emphatic affirmative answer to the question "Operation Smokestack" was designed to answer: Would concentrated screening yield new areas for products?

About 30% of the 331 calls made by the staff in the one-day venture turned up potential near-future applications; another 40% of the calls revealed long-term prospects. About five immediate applications were discovered. And one skillful salesman actually wrote an order of several thousand pounds of one chemical for a metal finishing plant. Some examples:

- In a forging plant, a salesman discovered that corrosion after quick-dipping was a problem, that a sequestrant—from Pfizer—might solubilize the iron in the dip.

- A plastering machine manufacturer revealed that stabilization of plaster viscosity was a headache. Pfizer technical service will follow up, check out sodium citrate as the answer to the firm's problem.

- Several tool and die producers complained of difficulties with bacteria in cutting oil (*see p. 91*) sludge and slime. Antibiotics may be able to lick the problems.

- A chemical specialties producer



Salesmen check map before starting 'smokestack chase.'

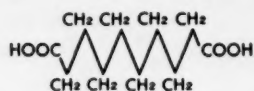
Why should YOU remember Sebacic Acid?

Simply because it is one of the most useful building blocks in the world of synthetics — and it provides more permanence and durability than any other difunctional intermediate.

To help you remember a few key things about sebacic acid (your research people will know the details) a typical molecular chain is represented below. The detailed parts of the chain are the sebacic radicals.

The sebacic acid chain is the longest straight chain found in any of the commercially available di-basic acids. The longer the chain, the more flexibility is available; the straightness or absence of branches makes the chain very difficult to disturb structurally.

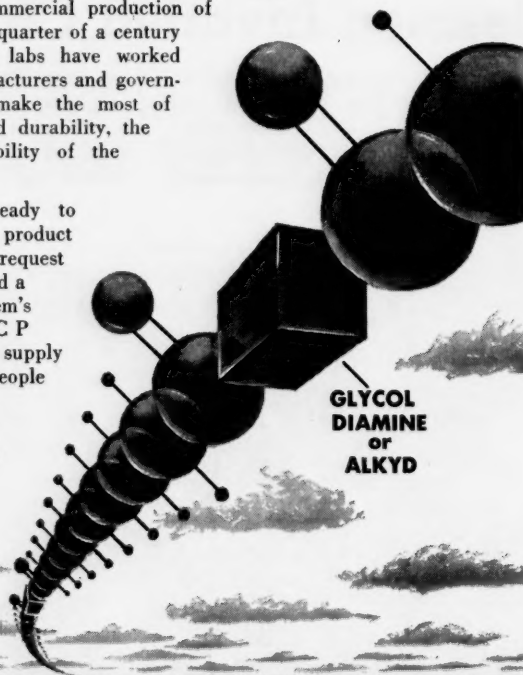
No matter what you link with the sebacic chain — the basic chain remains the same. Link it with alcohols to make esters and you have plasticizers or lubricants. React sebacic with glycols to make polyesters; link the sebacic to diamine to make nylon; to alkyds for paint and coatings. The sebacic chain also appears as the backbone of high quality polyurethanes.



Whatever you do with sebacic acid, the sebacic link in the chain means exceptional resistance to weather or water, chemical or physical abuse, extremes of heat or cold.

The Harchem Laboratories have helped develop sebacic applications such as superior synthetic lubricants built around Di-octyl-sebacate and the new use in polyurethanes. Ever since Harchem began commercial production of sebacic acid over a quarter of a century ago, the Harchem labs have worked with product manufacturers and government agencies to make the most of the permanence and durability, the flexibility and stability of the sebacic chain.

Harchem stands ready to assist you with your product development too. A request for bulletin H-32 and a sample of Harchem's 99% sebacic acid (C P grade) will quickly supply your development people with the pertinent information for initial investigation.



THE KEY TO

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IN CANADA: W. C. HARDESTY LTD. OF CANADA LTD., TORONTO

SALES

requested samples of several Pfizer products, told the salesman of future interest in itaconic and kojic acid, although the specialties firm had never before contacted Pfizer.

• At a paint and wallpaper plant, fumaric acid was being used. Although Pfizer makes fumaric acid, the company was not on Pfizer's prospect list.

Setting Up: "Operation Smokestack" was held as a one-day exercise in the annual week-long meeting of the bulk chemical sales division. The Chicago regional field sales manager selected areas for canvassing. Emphasis was on quantity rather than quality of prospects in the districts. Size was restricted (with a few exceptions) to a 1/2-to-1-sq.-mile area to facilitate "on foot" coverage.

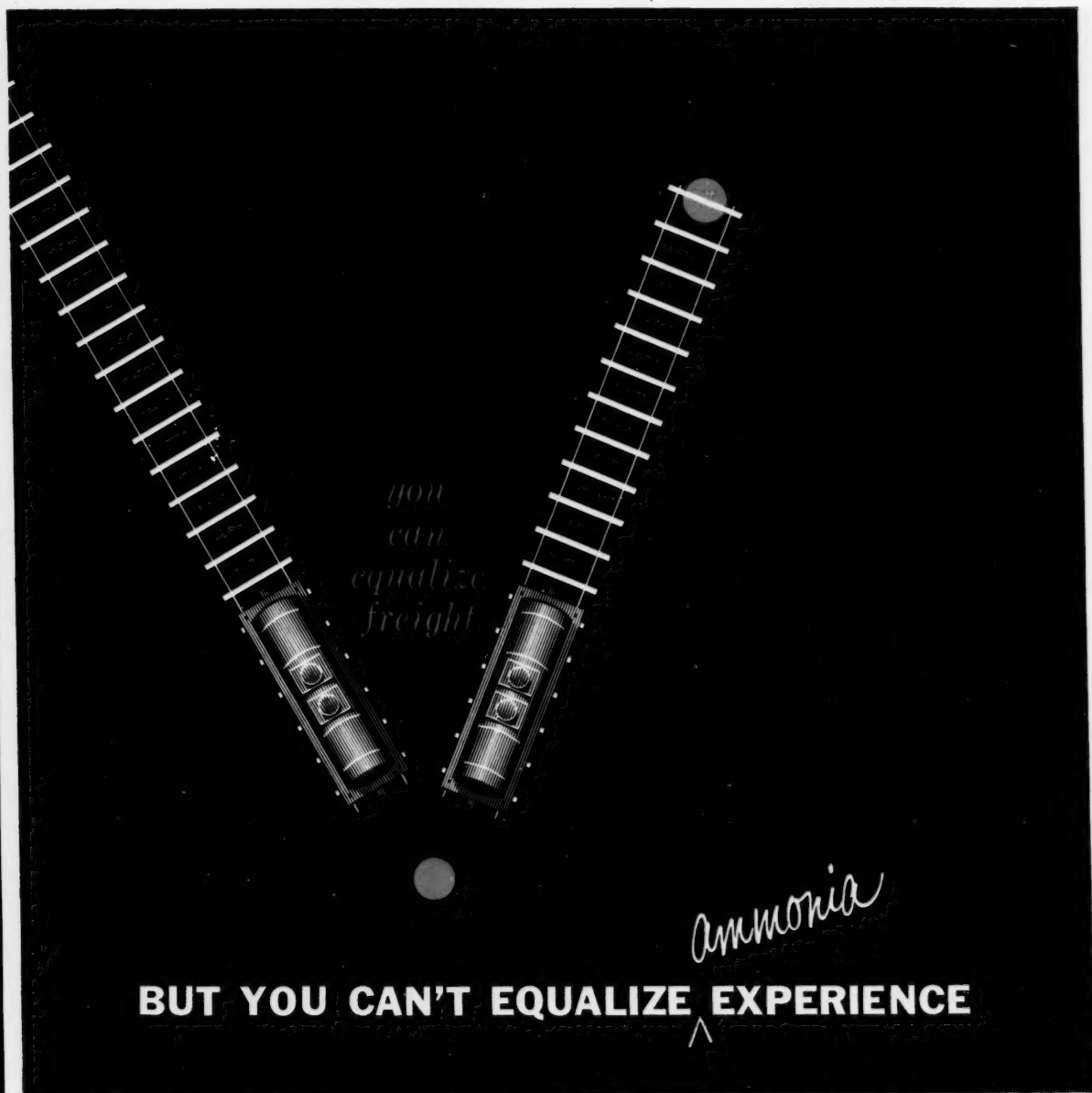
Salesmen received assignments by a "hat" draw, were furnished with kits containing a map, list of present customers and prospects, special call report forms, price books and literature and territory boundary and transportation instructions. Sales staffers were instructed not to contact accounts previously solicited or on a "prospect" list.

On the average, nine calls per man were made. The highest was 14, the lowest, six. About 60 different types of industries were reached, but concentration was heaviest in the electrical and electronic equipment, sheet metal, food and beverage, rubber and plastics, metal finishing and the tool and die trades. Oddly, "a very significant" potential application turned up in a feather processing plant. But what it is, Pfizer won't say.

Pfizer estimates that its "smokestack" project covered, at the most, only 50% of the industries in the area. The company found one industrial concentration of 20 factories not on present 1957-58 maps of industrial Chicago.

In the evening of "Smokestack Day," salesmen broke into small groups to prepare reports evaluating the day's results. Although both the staff and some regional sales managers had received the "smokestack" project with some understandable reservation, their experience produced a profound change in attitude. Consensus: the day's work was well worth the effort. Several thought their own territories suitable for "smokestacking." Group reports were presented at panel sessions the following day.

To add incentive to the campaign



No, you can't equalize experience! And Allied's Nitrogen Division is *FIRST* in ammonia experience. Years of pioneering better production methods, of helping users solve all kinds of technical problems . . . these things don't always show up in customers' costs or product analysis. But they're a real plus value to ammonia users. For assured delivery, expert technical assistance and a product of uniform high purity, always specify Allied ammonia.



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...in phenolic resins

The electrical resistor is in essence a simple, compact device with the obvious function of providing resistance in an electrical circuit. But its makeup can have very interesting implications if you are faced with problems that call for bonding, coating, or adhesive agents.

The familiar type of fixed resistor you see here uses a carbon composition element insulated and protected from moisture by a phenolic sleeve. It can do its job properly only so long as its resistance rating is held within the small tolerances allowed in electrical and electronic work. For this, manufacturers rely on the insulating characteristics of Durez phenolic

resins—their moisture resistance and their stability under varying conditions of heat and humidity.

The electrical characteristics of Durez resins are combined with mechanical and chemical properties which make them widely useful in industry. Current applications range all the way from shell molds for metal castings, to dense, strong board manufactured from sawdust or wood particles, to mortars and cements used for bonding acid-proof brick.

As pioneers in developing phenolic resins, may we suggest that their versatility may hold the solution to problems in your operations? Our long experience is at your service.



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HOOKER ELECTROCHEMICAL COMPANY

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Export Agent: Omni Products Corp., 460 Fourth Avenue, New York 16, New York



SALES

and report preparation, one \$100 and two smaller prizes were awarded for the best reports by salesmen.

Bonus: Apart from uncovering new markets and customers for Pfizer chemicals, "Operation Smokestack" yielded several extra benefits:

- Secondary leads. Salesmen often learned that suppliers of the "smokestacked" firms were potential customers. Example: a cutting oil supplier might be a prospect for Morton Withers Chemical Co. (new Pfizer acquisition) sulfonates.

- Training. A few sales trainees participated in the activity. It permitted trainees to gain valuable experience, make mistakes without fear of serious consequences.

- Cross fertilization. Salesmen learned, both from personal experience and from that of others in the group, of types of industries doing business in their home territories and which might be markets for Pfizer chemicals. Many, for example, had never contacted plating firms. One Northeast salesman called on the home office of a plating company located in his territory and realized the plant—which he passed nearly every week in making his usual calls—might be an excellent customer. It was.

- Market research. The smokestack project suggested that concentrated market research in certain areas might be profitable.

Cost Considerations: "Smokestacking" is an obviously expensive venture. Had Pfizer not been able to write off much of the cost to its annual sales meeting, the project would have set the company back the travel, salary and lodging expenses of about 40 men, planning expenses (three weeks of a regional manager's time) and incidentals. An estimate of the total might run \$4,500-\$6,500.

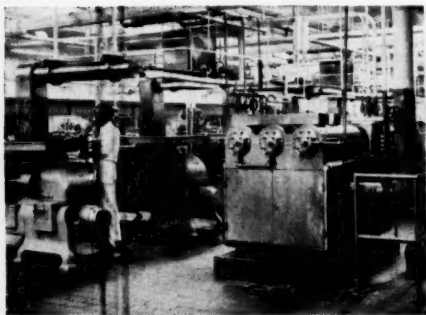
So far, Pfizer has not yet fully estimated the business its "Operation Smokestack" may bring in. But, says General Manager J. P. Smith, "In terms of what we were going to accomplish, it was eminently successful. We are not ruling out future 'smokestacks,' but use on a routine basis is a different matter. From the results, however, we would be almost tempted to consider all major industrial areas for future 'smokestacks.'"

For a closeup of one Pfizer salesman, turn the page.

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of traveling
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Salesman Bill Ray confers on his 'Smokestack Day' itinerary. Locates his first contact.

'Operation Smokestack'—continued

One 'smokestacker' starts his day

At 9:30 a.m. on "Smokestack Day," Pfizer's Atlanta-area salesman Bill Ray made his first call—on the Hankins Container Corp. From assistant superintendent Leonard Rains, Ray learned that the firm made shipping containers, was interested in citric acid to activate adhesives on wrapping tapes.

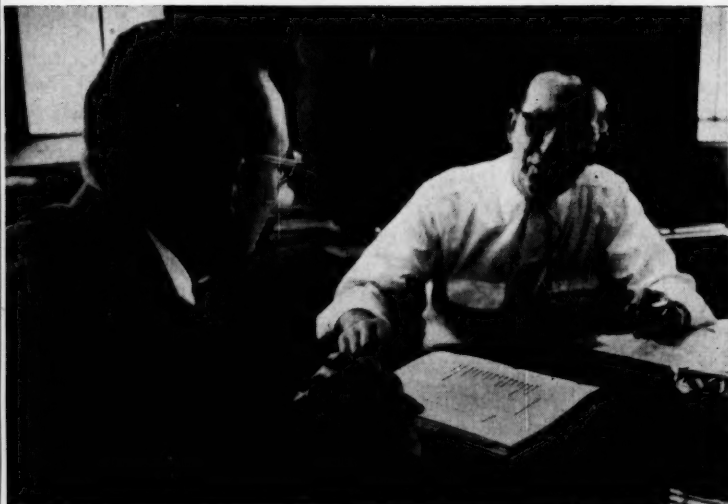
His next stop was a soap and cosmetics producer, Wisleys, Inc., which revealed an interest in neomycin for soaps, vitamin A for hormone and skin creams.

Three calls later (after lunch), S.O.S. Co., a cleaning-pad producer, discussed potential applications for Pfizer chemicals. Four calls later, he found that L.A. Young Spring & Wire might be a future customer for metal cleaning chemicals.

Tired after a hard day of "smokestacking," Ray made his ninth and last call—the Met-L-Wood Co., a metal-to-wood laminating company. Result: potential orders for sodium gluconate and citrate and citric acid. Ray's efforts netted five prospects; his report won one of three cash prizes.



Getting past receptionist . . .



. . . he talks with assistant superintendent about citric acid for adhesives. Outside, he writes report.

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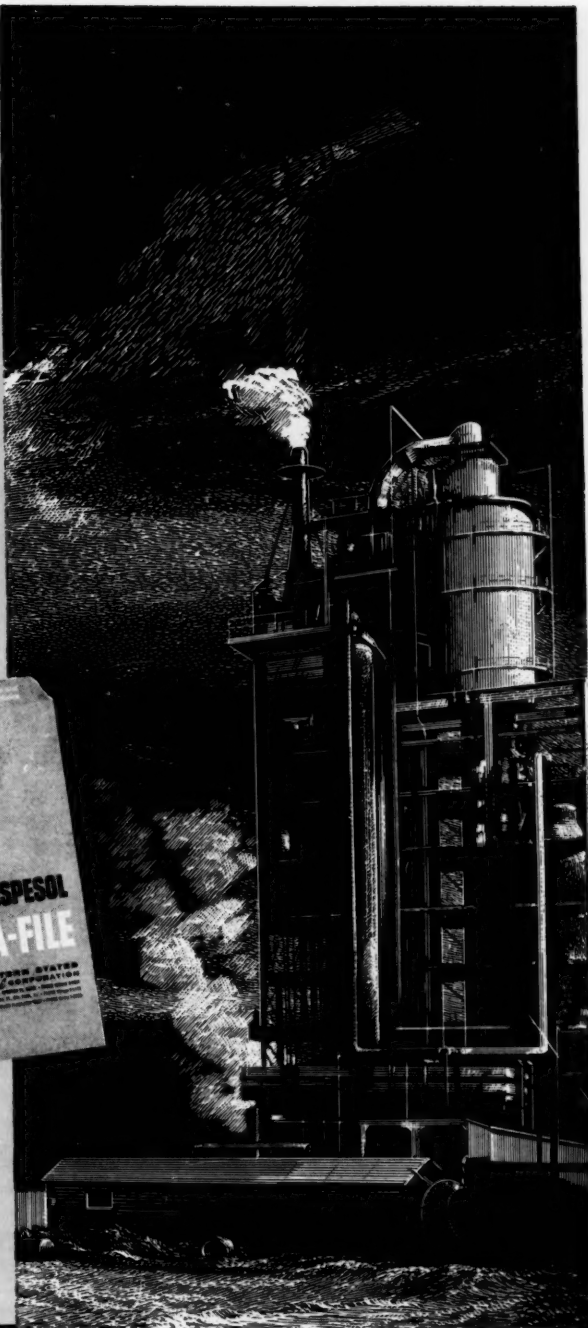
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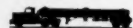


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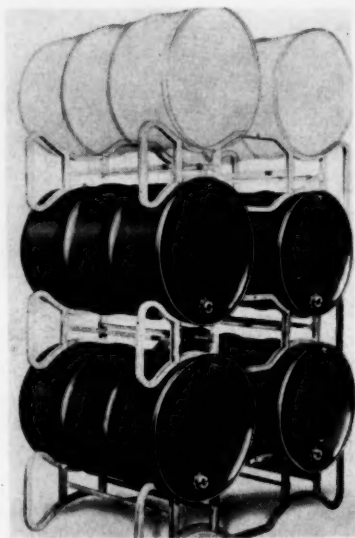
SALES

DATA DIGEST

• **Polyethylene:** Folders describe properties and potential applications of Marlex 50 (polyethylene resin) and Marlex 50 (polyethylene film). Phillips Chemical Co., Plastics Sales Division (Bartlesville, Okla.).

• **Polyvinyl alcohols:** Applications in adhesives, sizing, saturating, laminating and coating paper, fabric finishing, oil emulsification, plasticizers, solvents, waxes and other areas are outlined. Physical properties, compounding and modification of the materials are also discussed. Chemical Division, Borden Co. (New York).

• **Petroleum sulfonates:** 12-page bulletin covers chemical structure, stability, viscosity, hard-water resistance, surface-tension characteristics, emulsification and corrosion inhibition. End-uses are suggested, and physical properties specifications are furnished. L. Sonneborn Sons, Inc. (New York).



Rack for Stack

A brand-new type of drum rack arrived on the market this week. The device cradles two loaded barrels, permits pairs of drums to be stacked atop each other. Special new design feature: standard fork lift truck—without special attachments—can handle loaded racks from front, side or rear. The racks are manufactured by Republic Steel's Pressed Steel Division.

Things to come...

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Nice work for a new derivative

Among the newest of Glycerine's derivatives to enter beauty's service are the acetoglycerides. The acetoglycerides promise to produce cosmetics that are easy to apply and which retain initial plasticity under widely varying conditions.

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Glycerine is widely used in oil-in-water emulsions in vanishing type creams. Here it smooths application and prevents "rolling." Glycerine is also a needed plasticizer, solvent, and humectant in beauty packs, creams and deodorants. It is used in depilatories based on methyl cellulose. It is

preferred in many skin toning and dry skin lotions, and is virtually indispensable in the aqueous phase of industrial protective creams.

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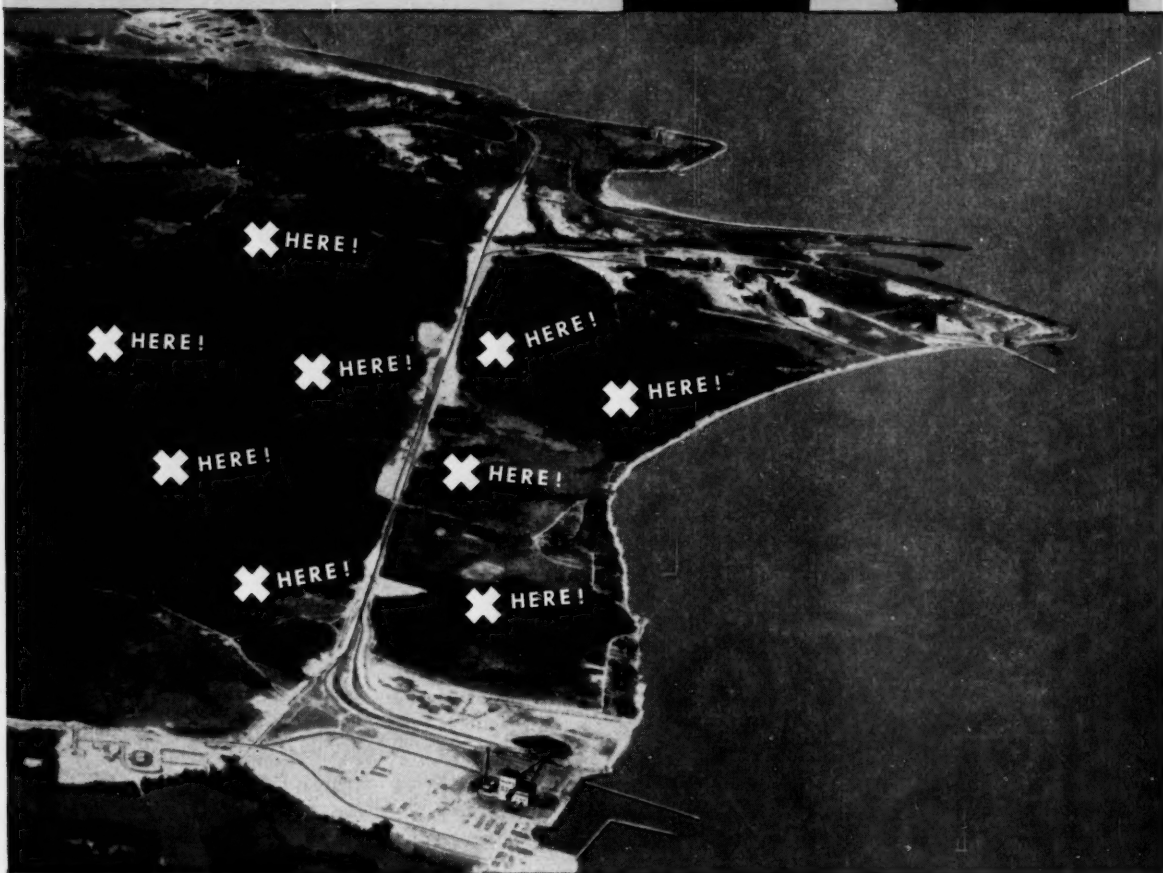
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Can Soda Ash Soak Up Caustic Excess?

A switch on a conventional process could pay off for chlorine producers who, once again this week, were facing their perennial bugaboo: what to do with a surfeit of coproduct caustic soda (CW Market Newsletter, Oct. 12).

The switch: use the excess caustic to make soda ash. As shown in the charts (right), caustic supply is expected to continue to outstrip demand, while increasing soda ash demand will have to be met by new supplies in future years.

The idea is not completely new—Dow has been carbonating caustic at Freeport, Tex., for two years (CW Technology Newsletter, Oct. 8, '55). But Solvay, for one, is still doing just the reverse: making caustic from soda ash by the traditional lime-soda method. Most producers, however, obtain their caustic when they electrolyze salt to produce chlorine, are looking around for new caustic outlets. For those with the right set of circumstances, channeling caustic to soda ash production may be at least a partial answer.

This question came up at the recent Baltimore meeting of the American Institute of Chemical Engineers in a paper coauthored by Frontier Chemical's Melvin Clark and Wyandotte's Charles Gerlach. Their discussion was based on the premise that caustic excesses would grow rather than diminish through the next decade. And they arrived at three possible solutions:

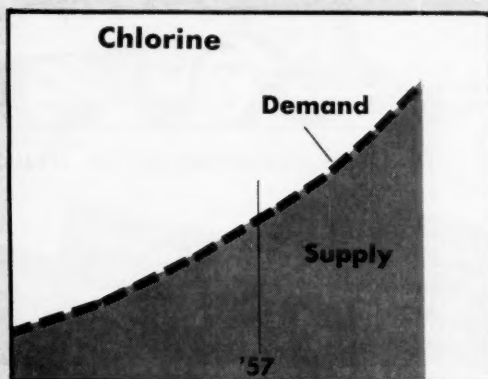
- Making chlorine without caustic—an old route that's receiving considerable attention from chlorine consumers who have ready access to abundant supplies of by-product hydrogen chloride (CW, July 6, p. 74).
- Converting existing plants from lime-soda caustic to production of finished soda ash. Though only a few plants still employ the lime-soda process to make caustic (CW Charting Business, Oct. 12), those that do obviously find it economic and are unlikely to switch to soda ash production.

- Direct carbonation of diaphragm cell liquor to soda ash. This method is technically feasible, but depends on a combination of favorable economic conditions to make it profitable.

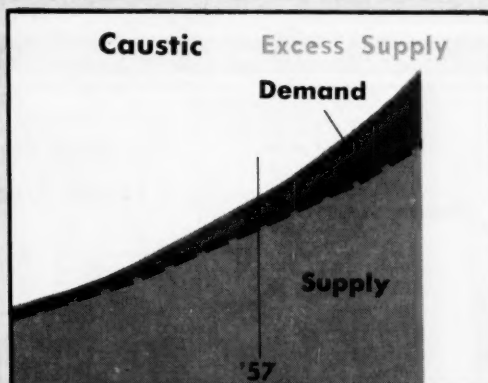
R. B. MacMullin Associates (Niagara Falls, N.Y.), for example, has available several processes for making soda ash from caustic at minimum cost. There are half a dozen ways of doing it, says MacMullin. The choice depends on a number of things—in particular, the present cost of caustic.

Another important factor is the incremental investment required for the addition of soda ash facilities to a chlorine-caustic plant. In the case of an existing plant that's equipped to turn out finished caustic, a soda ash process that starts with concentrated NaOH would

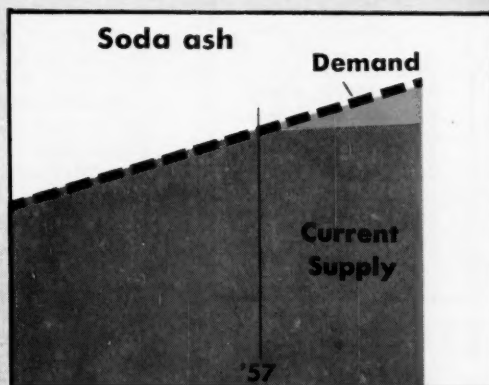
Way Out for Caustic Producers?



Mounting chlorine production . . .



. . . Forces oversupply of caustic



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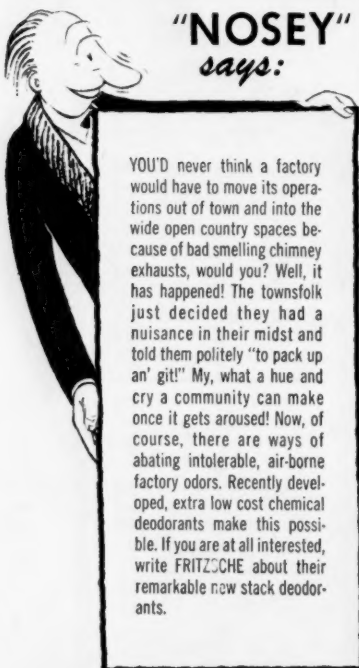
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ENGINEERING

most likely be the cheapest to install. For a new installation, on the other hand, caustic concentrating operations could be eliminated by the use of a process that directly converts dilute cell liquor (10-12% NaOH) into soda ash.

The producer who is thinking of making soda ash from caustic will find several economic points in his favor. For one thing, the equipment needed will not cost nearly as much as a new ammonia-process soda ash plant. Skyrocketing construction costs boosted initial investment for ammonia soda ash plants from \$13,500 per daily ton of capacity in 1940 to around \$30,000/daily ton in '51 (*CW*, Oct. 11, '52, p. 21), are chiefly responsible for the lack of new soda ash construction in recent years.

Dow apparently has an advantageous supply of carbon dioxide; it installed a 300-tons/day plant for \$3 million. This figures out to \$10,000/daily ton, which is somewhat lower than the average cost estimate for soda ash-from-caustic plants.

At first glance, it wouldn't seem to make much sense to use caustic as a starting material for soda ash, because on an equivalent Na₂O basis, caustic actually commands a premium of \$23/ton. But such a premium is largely academic in localized areas where there's no market for the excess caustic (*CW Market Newsletter* Oct. 12). And freight charges for a relatively low-value product make it economically unsound to ship it to areas where it's needed.

There are several other technological ways out for the caustic producer, of course. One likely way is to develop new processes that could be used by other industries and that would blot up large volumes of caustic. Diamond Alkali took a step in that direction with its new iron desulfurization method (*CW Technology Newsletter*, June 29).

And instead of using caustic to make soda ash, it would be far preferable to encourage the use of caustic or soda ash interchangeably. And many new alkali-consuming plants are being designed to do just that. But much of the equipment in older plants would have to be revamped. And industry has a natural reluctance to do this, especially when it entails switching to a higher-priced product than they are using.

C. O. Brown (New York City), an-

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points out that the question doesn't
lend itself to easy answers, that long-
range economics—in addition to short-
term markets—must be taken into

account for each plant.

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from caustic is one way the alkali-
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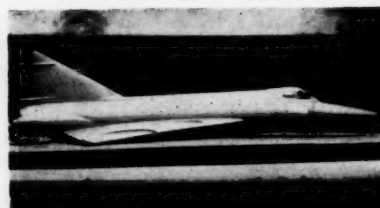


Westinghouse unit rapidly duplicates heat of supersonic flight.

Quick Burn Tests Metals

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alloys to withstand high tempera-
tures, one of the biggest challenges
chemical process companies ever
tackled, should get a boost from
this new Westinghouse test setup. It
simulates forces that come into play
when an aircraft or missile runs
into the heat barrier—a phenom-
enon of supersonic flight that sub-
jects structural components to ex-
treme thermal stresses. What
happens next is illustrated by the
model (right) as it is brought up
rapidly to thermal-barrier tempera-
tures in the test unit (above).

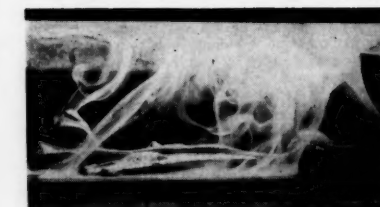
To simulate the effect of flying
through the barrier, Westinghouse
engineers devised a system of
ignitron-controlled infrared lamps
capable of generating 2500 F in
just 12 seconds. At least three times
faster than standard systems now in
use, the new unit eliminates time
lags to duplicate more closely the
flight conditions under which heat
is generated much faster than it
can be dissipated.



2 SECONDS



4 SECONDS



6 SECONDS

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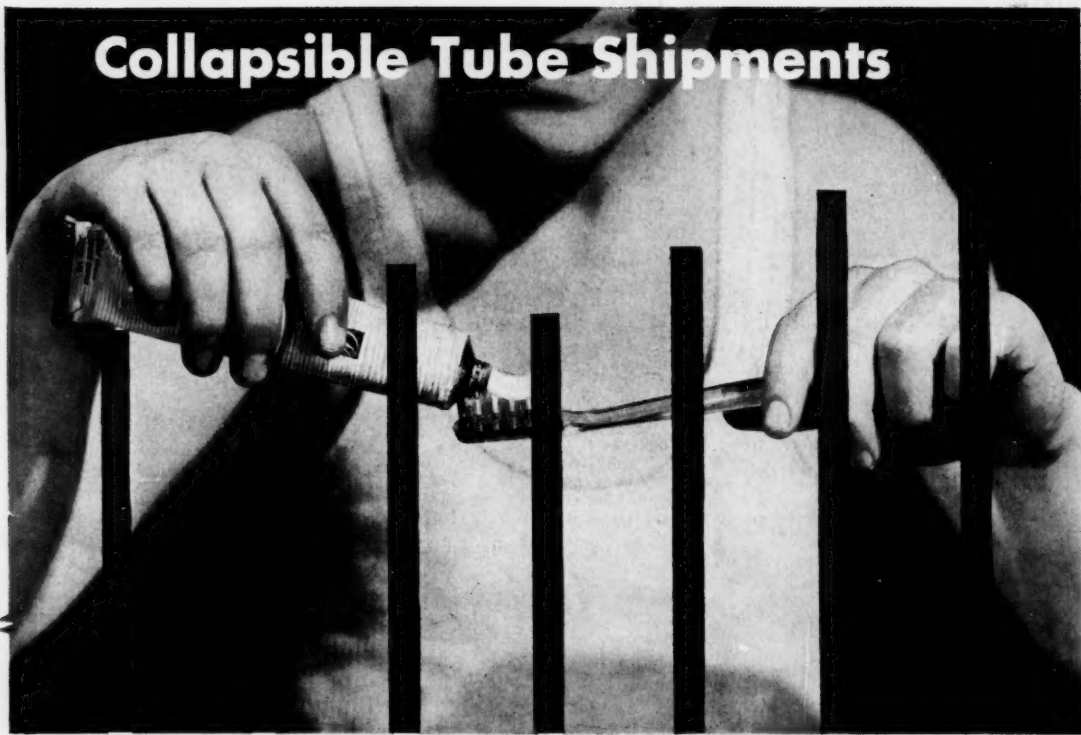
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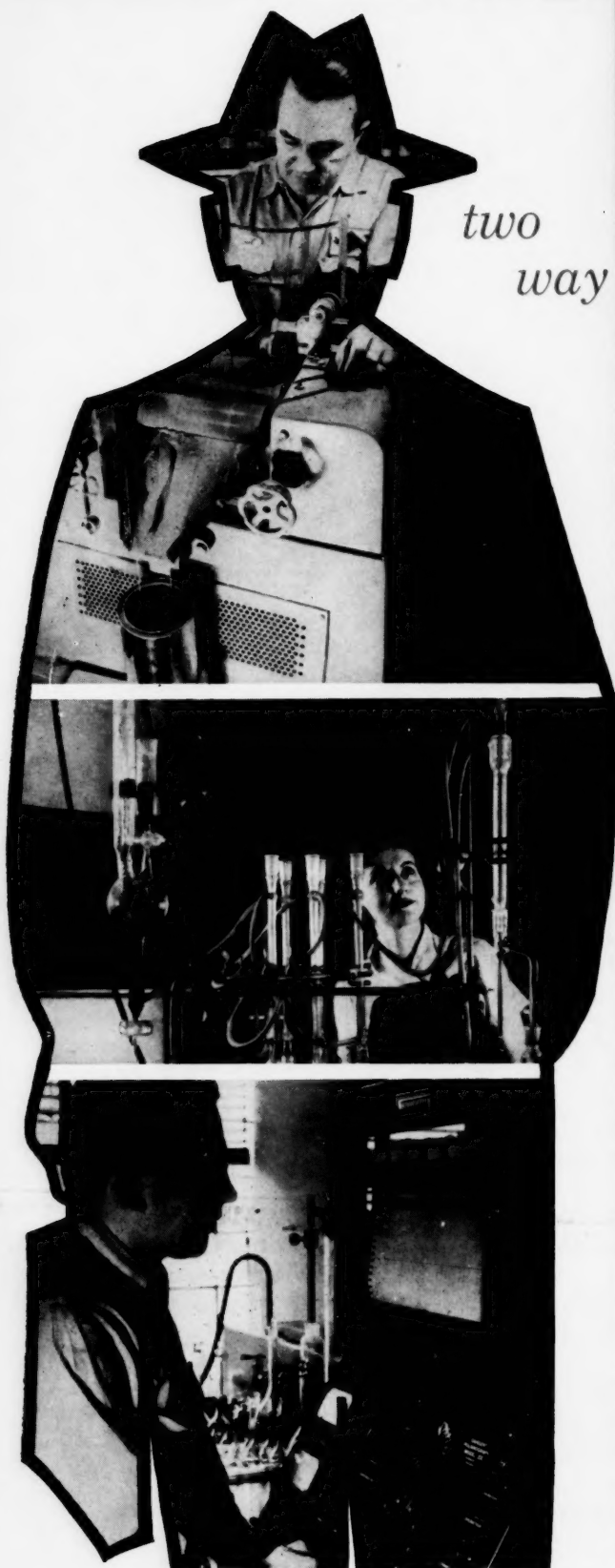
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